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Sustainable Resources Utilization and Implications for Economic Development in Sub-Saharan Africa: a Case Study of Cote D'Ivoire.

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SUSTAINABLE FOREST RESOURCES UTILIZATION AND IMPLICATIONS FOR ECONOMIC DEVELOPMENT IN SUB-SAHARAN AFRICA: A CASE STUDY OF COTE D'IVOIRE

A Dissertation

Submitted to the Graduate Faculty of the
Louisiana State University and
Agricultural and Mechanical College
in partial fulfillment of the
requirements for the degree of
Doctor of Philosophy

in

The School of Forestry, Wildlife, and Fisheries

by
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May 1998

DEDICATION

This dissertation research is dedicated

..... to my deceased father, Koudou ZaZa who gave me the opportunity and space for schooling, and the gift of insight. His spirit has guided me through life's hardships. From him, I learned optimism, perseverance, power of will, and the infinite range of possibilities in life. In his words my father said to me "son, because I love you so much, I am forced to send you away to attend school. For 20 years from now, the kind of life that my wife and I are living will be obsolete. So, if I do not send you to school, I would have made a big mistake and would have denied opportunities to an entire generation, namely my grandchildren". Until today, this thought has been the strength for my success.

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PREFACE

This dissertation is divided into seven separate chapters, each dealing with a different aspect of the research effort. The first chapter provides an overview of forest resources utilization and implications for economic development in Côte d'Ivoire and helps to place research results in perspective. The second chapter discusses the government forest policy issues in the context of economic development in Côte d'Ivoire. Chapter three shows a theoretical model and associated hypotheses that examine communication links among stakeholder groups. Chapter four explains the methodology used to conduct the fieldwork in Côte d'Ivoire. The rationale for choice of research design and data collection are also explained in the chapter.

Chapter five and six discuss the results of individual stakeholder groups and research findings across the four stakeholder populations and the tests of hypotheses related to communication links among stakeholders.

The last chapter concludes results and provides recommendations based on literature review and fieldwork. Both researcher and respondent recommendations to mitigate future unsustainable forest utilization and management practices are provided.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ABSTRACT

In the 1960's, sub-Saharan Africa had one of the world's largest rain forests. Today, however, Africa accounts for only 27 percent of the world's forest area. Expansion of agricultural lands at the expense of forests remains the fundamental contributor to deforestation in Côte d'Ivoire. Other factors include a high natural rate of population growth (3.9 percent annually) and flexible immigration policies that create land use pressures. Consequently, Côte d'Ivoire has lost almost 83 percent of its 16 million hectares (39.5 million acres) of tropical forests. Some corrective actions, such as halting illicit harvesting, reforestation and reforming logging activities, have been taken by the government, but such corrective actions have not addressed the fundamental factors leading to forest depletion. Harvesting operations are managed by granting licenses to logging companies to operate in classified forests. The total logging area in classified forests is currently estimated to be 2.9 million hectares (7.2 million acres), of which 1.6 million hectares (3.9 million acres) are in the south and 1.3 hectares (3.2 million acres) are in the savannah area in northern Côte d'Ivoire. The major forest stands are located in the south, the west and the southwest. Research results support the proposition that forestlands have been depleted and much needs to be done to improve the situation. Study results indicate that forestlands play a vital role in human welfare and that private landownership should be a determinant factor in controlling deforestation and promoting sustainable forest utilization and management in Côte d'Ivoire. This study also rejects the idea of attracting new primary and value-added industries in the short-run. Instead, the existing industries should be improved to

encourage sound forest utilization and management practices. Research results also show that there is lack of an adequate and effective communication among stakeholder groups. This lack of communication has contributed to forest depletion. Accordingly, it is recommended that communication gaps among stakeholder groups be reduced to promote sustainable forest utilization and management practices in Côte d'Ivoire.

PROBLEM STATEMENT AND JUSTIFICATION

Problem Statement

Previous studies have raised concerns about the preservation of African natural resources (FAO 1993; Sharma 1992; Repetto and Gillis 1988). They have focused on the relationship between the attitudes and behaviors of local populations and the degradation of the natural environment. Studies such as The Challenge of Sustainable Forest Management (FAO 1993), and Managing the World Forest (Sharma 1992) were limited to the perspective of government officials. Such studies neglected to value the importance of the access and involvement of indigenous people and other stakeholders in the management of forest resources.

The present study identifies concerns of forest stakeholders in Côte d'Ivoire, which include indigenous populations, wood products manufacturers, policymakers, forest managers and university or research experts in forest management and decision-making processes. There are two reasons to support such an approach. First, any sustainable policy intended to preserve Côte d'Ivoire's natural resources cannot be effective unless those who are affected by these decisions are consulted and willing to bring about change. It is often argued that people are likely to comply with the implementation of a decision if they have participated in its enactment. For this reason, policymakers should take into account the attitudes and behaviors of stakeholders beyond government officials. Second, forest utilization and management problems are multifaceted and cannot be solved by any single stakeholder. Interactions among all stakeholders would bring about a better approach for sustainable forest management in Côte d'Ivoire.

Research Objectives

1. To develop an integrated model of communication and interactions among the different stakeholder groups. This model is linked to management practices and outcomes.

2. To identify the demographic characteristic of forest related stakeholders in Côte d'Ivoire.

3. To identify current and potential sustainable forest development practices in Côte d'Ivoire.

4. To examine the relationship among stakeholders and their participation in forest management and development programs.

References

FAO. 1993. The Challenge of Sustainable Forest Management: What future for the world's forest? Rome: Publications Division, Food and Agriculture Organization of the United Nations (FAO).

Sharma, Narenda P. 1992. "World Forests in Perspective". In Managing the World Forests: Looking for balance between conservation and development ed. Narenda P.Sharma. Kendall/Hunt Publishing Company. Dubuque, Iowa.

Repetto, Robert and Malcolm Gillis (eds.). 1988. Public policies and the misuse of forest resources. Cambridge University press, Cambridge.

BACKGROUND INFORMATION

Sub-Saharan Africa

Sub-Saharan Africa is composed of 47 countries sharing many common characteristics (Table 1). These countries, with an area of 23.6 kilometer squares, vary significantly in terms of population size and economic scale. Nigeria, the largest country, has a population of 105 million. Ten countries have less than 1 million people with Seychelles, the smallest, having a total population of less than 75,000 (Sparks 1997). The region's total population is estimated at 572 million. Educational levels also vary greatly. For example, Mauritius has a literacy rate of about 83 percent, while Burkina Faso's is less than 20 percent. Climate and topography are diverse and include Mediterranean, tropical and semi-tropical, desert, rain forest, savannah, mountains and plains.

Table 1. Sub-Saharan African Countries

ANGOLA	GABON	SAO TOME
BENIN	GAMBIA	SENEGAL
BOTSWANA	GHANA	SEYCHELLES
BURKINA FASO	GUINEA	SIERRA-LEONE
BURUNDI	GUINEA-BISSAU	SOUTH AFRICA
CAMEROON	KENYA	SOMALIA
CAPE VERDE ISLANDS	LESOTHO	SUDAN
CENTRAL AFRICAN REPUBLIC	LIBERIA	SWAZILAND
CHAD	MALAWI	TANZANIA
COMOROS	MALI	TOGO
CONGO REPUBLIC	MAURITANIA	UGANDA
COTE D'IVOIRE	MAURITIUS	ZAMBIA
DEMOCRATIC REPUBLIC OF THE CONGO	MAYOTTE	
	MOZAMBIQUE	
DJIBOUTI	NAMIBIA	
EQUATORIAL GUINEA	NIGER	
ERITREA	NIGERIA	
ETHIOPIA	RWANDA	

The economies of Sub-Saharan Africa are considered lesser developed and fragile. The combined 1996 gross domestic product (GDP) of the region is about $286

billion, less than that of the Netherlands (Sparks 1997). Sub-Saharan Africa accounts for less than one percent of world trade, and for only four percent of global GDP (Nigeria and South Africa jointly account for 40 percent of the regional total). Africa's annual GDP per capita was estimated at less than US $500 in 1996, with annual income per capita ranging from Mozambique's US $80 to Seychelles' US $6,280 (Sparks 1997). Sub-Saharan Africa GDP increased by 2.2 percent in real terms in 1994 and by 3.2 percent in 1995, according to the World Bank which estimates that the region's GDP will increase by 3.3-4.1 percent annually between 1995-2005 (World Bank 1996). However, given a population increase projected at 3.2 percent annually, this results in a growth rate per capita of less than one percent (Sparks 1997).

Some Sub-Saharan countries such as South Africa, Democratic Republic of The Congo (ex-Zaire), Gabon, Nigeria and Zimbabwe, are relatively well-endowed with natural resources, while others, such as Chad, Burkina Faso, Niger, Malawi and Somalia have few such assets. The region contains the world's largest reserves of a number of strategic minerals, including gold, platinum, chromium and cobalt. The African largest forest reserves are found in the Congo basin in countries such as Democratic Republic of The Congo, Congo Republic, Cameroon, Angola and Gabon (Figure 1).

However, by any economic or social indicator, Sub-Saharan Africa perform less than any other developing region. Among the 47 least developed countries, 32 were in Sub-Saharan Africa. Sub-Saharan Africa has found itself retreating economically while other developing areas of the world are advancing soundly. For example, at independence in 1960, Côte d'Ivoire was more prosperous than Malaysia.

Figure 1. Map of Africa Showing Sub-Saharan Region

Forest Resource Degradation in Sub-Saharan Africa

Depletion of the world's rainforest and accompanying environmental degradation have been global issues since the middle of the 20th century. Saving the remaining forests in both tropical and temperate areas has become an important priority of the world community (Rajagopalan 1992). Lead agencies in research and development include the Food and Agriculture Organization (FAO) of the United Nations, the World Bank, and the International Tropical Timber Organization (ITTO).

Most Sub-Saharan African countries have regulations and administrative structures for the forestry sector within which forest management is implemented. However, often these laws are out of date and are neither enforced nor enforceable (FAO 1993). During the pre-1960's colonial period, local people's rights and indigenous management systems in forest producing countries in Africa were ignored with property rights often forcibly relinquished. Some countries, upon gaining independence, immediately transferred government forestlands to farmers. Although in many countries reserves still exist which contain protected forests, a legacy of antagonism between forestry officials and local communities tends to persist and remains a serious obstacle to forest management (FAO 1993).

In the 1960's, Sub-Saharan Africa had one of the world's largest rainforests (Lofchies et al. 1981). Today however, Africa accounts for only 27 percent of the world forest area (Sedjo et al. 1984). Three decades after African independence was won, the forestlands are being rapidly harvested from both careless extensive cultivation for cash crops and food production to help increase the export earnings.

This situation is creating great concern about the depletion and degradation of forest cover in tropical Africa and resulting serious problems such as deforestation, soil erosion, desertification and loss of genetic diversity of flora and fauna (Darkoh 1993).

Widespread environmental degradation in Sub-Saharan Africa is largely attributed to the absence of environmental awareness or consciousness among the poor indigenous populations (Plumpwood 1982). However, the foremost cause is the rapid growth in human population that, in turn, leads to over-exploitation and poor management of African natural resources through over-cultivation, overgrazing, poor irrigation practices, pollution, etc. (Darkoh 1993). Negative human and livestock population pressures will persist if new sustainable forest utilization techniques are not adapted.

The consequences of poor resource management are manifested differently in different African countries. For example in Côte d'Ivoire, legal property rights are recognized once land has been clear cut and cultivated, while in post-Apartheid South Africa, land ownership can be justified by those who can economically invest in forestland in order to help support national economic growth. Regardless of the variation, the impacts will eventually be measured in negative economic and social terms (Brown 1988). This can be illustrated by the fact that the demand for household fuel poses a clear threat to economic development in most sub-Saharan African countries such as Mali, Burkina Faso, Chad, Malawi, and Niger. It has also led to denuded forests near rural villages and around towns and cities (Darkoh 1993). Presently, fuelwood shortages affect more than 30 countries in Sub-Saharan Africa.

Commercial harvesting for lumber, land clearing to make way for food and cattle farms, and the peasant use of the forest for fuel and fodder all threaten the remaining natural forests; forests which, in tropical climates, are highly susceptible to damage from human activities (FAO 1993).

Côte d'Ivoire

Formerly a French colony, Côte d'Ivoire is a stable, multiparty democracy which achieved independence from France in 1960 (NationalTrade Data Bank 1996) (NTDB). Located in West Africa, it is surrounded by Burkina Faso and Mali to the north, Liberia and Guinea to the west, Ghana to the east, and the Gulf of Guinea to the South. The total land area is 322,000 square km with a population of 14.5 million and 60 different ethnic groups (NTDB 1996). The major ethnic groups are Akan and Kru, respectively. Urban areas represent 39 percent of the total population with the remaining 61 percent being rural. An estimate of about one-third of Côte d'Ivoire's population is non-Ivorian with most being immigrant workers from neighboring countries (NTDB 1996).

Côte d'Ivoire has one of the highest natural rates of population growth in the world. Between 1965 and 1980, its annual population growth rate was about 4.1 percent and dropped to 3.9 percent between 1980 and 1990 (Brou 1996). The demographic pressure is also contributed by flexible immigration policies and hospitality which attract many neighboring Africans (NTDB 1996).

Côte d'Ivoire contains 9 percent arable land, 4 percent permanent cropland, 9 percent meadows and pastures, 26 percent forest and woodland and 52 percent for other uses such as shifting cultivation (NTDB 1996). By the Ivorian constitution, the state

has the ownership of the land although indigenous people living on the land typically claim ownership. This instigates a conflict between the state and the indigenous people.

Côte d'Ivoire is one of the most important countries in West Africa in forest resources and economic development. In 1993, GDP was valued at US $9.2 billion (NTDB 1996). The country has a tropical humid climate, with economic development rooted heavily in its forest resources. During the colonial era at the beginning of this century, Côte d'Ivoire began exporting logs, mainly acajou species (Khaya Ivorensis) to European Markets (Brou 1996). Major crops include cocoa, coffee, cotton, rubber, pineapples and bananas. Leading exports are cocoa and coffee (Brou 1996). Côte d'Ivoire enjoys a market-driven economy. However, the production sector is essentially controlled by the government. During Côte d'Ivoire's first two decades of independence, economic development was spectacular with an average annual growth rate of 7 percent (Brou 1996). This result was fueled by export revenues from commodity crops. As a result, a vast program of agricultural diversification and infrastructure investment was realized. By the end of the 1980's and early 1990's, Côte d'Ivoire experienced a major economic downturn which affected the earnings. Prices of commodity crops were depressed and an imbalance occurred at the macroeconomics level (Brou 1996). Consequently, the country's budget deficit sharply increased and debt rescheduling was required on numerous occasions (Brou 1996).

The January 1994 devaluation of Côte d'Ivoire's CFA Franc remains a watershed event (NTDB 1996). Following the devaluation, prices for major export commodities, such as cocoa and coffee, rose to levels that had not been seen for many

years (NTDB 1996). Also, Côte d'Ivoire's structural program imposed by the World Bank and International Monetary Fund (IMF) in 1994 and 1995 was successful in terms of economy growth, inflation and external equilibrium. As a result, real GDP grew 1.7 percent in 1994 and 7 percent in 1995, the latter being one of the highest growth rates in Africa (NTDB 1996). This spectacular economic growth is expected to continue in coming years (NTDB 1996).

Currently, economic development is characterized by privatization of different state owned companies and the redefinition of the role of the government in the context of the democratization process (Brou 1996). After independence, the state assumed the responsibility to be the major employer. As a result, most companies were owned by the state. At the end of the 1980s and early 1990s the government adopted the strategy of the privatization of the state owned companies to increase the adaptation of the new technology and to promote efficiency.

References

Brou, Oura. 1996. Rapport sur la politique Forestiere en Côte d'Ivoire. Côte d'Ivoire FAO Forestry Paper N.132, 259 PP.

Brown, Janet W., 1988. Poverty and environmental degradation: Basic concerns for US cooperation with Developing countries, Washington DC, USA, World Resources Institute.

Darkoh, M.B.K. 1993. Land degradation and soil Conservation in Eastern and Southern Africa: A research Agenda. In Desertification Control Bulletin, N. 22, 1993. United Nations Environment Programme, Rome, Italy

FAO 1993. The Challenge of sustainable forest management: What Future for the World's Forest ? Rome, Italy.

Lofchie, F. Michael and Commins, Stephen K. 1981: "Food deficits and Agricultural policies in Tropical Africa", Journal of Modern African Studies, vol. 20, No. 1, March 2, 1981.

National Trade Data Bank. 1996. USDA, Foreign Agricultural Service. Agworld Attache Reports. Ag Agworld IV50528.

Plumpwood, V. 1982. World Rain Forest Destruction: the social factors in the Ecologist, Vol.12, No.1

Rajagopalan, R. 1992. In the Challenge of Sustainable Forest Management: What future for the world's forest? Food and Agriculture Organization of United Nations (FAO). Rome, Italy.

Sedjo, R.A.; and M.C. Clawson .1984. Global forests. Pp 128-170. In J.L. Simon and H. Kahn, eds., The Resourceful earth: A Response to global 2000. New York.

Sparks, L. Donald. 1997. Economic Trends in Africa South of the Sahara in Africa South of Sahara 1998. Twenty-seventh Edition. Europa Publication Limited. Bedford Square, London, WC1B 3JN, England.

World Bank 1996. Environment and Development in Africa. Washington, DC

CHAPTER 1

FOREST RESOURCES UTILIZATION AND IMPLICATIONS FOR ECONOMIC DEVELOPMENT IN COTE D'IVOIRE

Introduction

For practitioners and others involved in international forestry, it is important to understand current forest related issues and dynamics in producing regions of the world. Media and researchers have often sounded the alarm that the health of Amazonian forests is linked to the survival of human kind (Wagner et al. 1993). This same view is rarely expressed for other developing countries where the tropical forests play a vital role in economic development.

The purpose of this chapter is to discuss forest resources and its relationship to economic development in Côte d'Ivoire in sub-Sahara Africa. Côte d'Ivoire has lost almost 83 percent of the 16 million hectares (39.5 million acres) of tropical forests that existed in 1960 (Gome 1996). Many forest related problems currently impact development in this country. For example, rapid deforestation is an acute problem that affects the daily lives of Ivorians. Although some corrective actions such as halting illicit harvesting, reforestation and reforming logging activities have been taken by the government, expansion of agricultural lands at the expense of forests remain the fundamental contributor to deforestation in Côte d'Ivoire. Other factors include a high natural rate of population growth (3.9 percent annually) and flexible immigration policies which create land use pressures.

Unfortunately, government corrective actions have not addressed the fundamental factors leading to forest depletion. In essence, the government has

transitioned from a policy of offering harvesting concessions, to an interim policy of timber export quotas, to an outright total ban of timber exports. These policies did not serve to aggressively combat forest depletion and stimulate sustainable forest management and wood products production. They simply shifted export products from logs to semi-finished products. The conversion from sustainable utilization of forests to unsustainable agricultural cultivation has produced only short-term productivity gains at the expense of long-term socio-economic benefits (ADB 1990). The reason that the government of Côte d'Ivoire has promoted utilization of land for the production of food and cash crops is for short-term benefits which is part of an overall strategy of reducing the national debt.

The continuous destruction of forestlands is one of the most unfortunate and dramatic events in Côte d'Ivoire. Currently, Côte d'Ivoire is losing 450,000 hectares (1.1 million acres) of its tropical forests annually (Gome 1996). Although tropical forest ecosystems are often viewed only as a source of commercial timber and fuelwood, they play a much larger and significant social and economic role in rural as well as in urban and national economies. In addition, forests protect rivers, lakes and dams from siltation, as well as counteract soil erosion and influence rainfall (ADB 1990).

The future development of Côte d'Ivoire will require strategies that respond to forest resources depletion challenges and that counteract unsustainable economic development. Such strategies must encourage the management of demographic pressures, implement intensive methods of agricultural production, develop alternatives to fuelwood, and combat poverty (ADB 1990). Considering the importance of forest

resource issues, an integrated approach using inclusive policy dialogue should be encouraged.

The Forest Situation in Côte D'Ivoire

The Ivorian forest was originally a natural rain forest, with forest regeneration accounting for only 2 percent of total forest area in the 1990s (NTDB 1996). Plantation forestry started in 1935 under the colonial administration, but it was not until the creation of SODEFOR (La Societe pour le Development des Plantations Forestieres, a government forest development agency) in 1966 that forest planting and management activities were fully established by the government (NTDB 1996).

Before the establishment of SODEFOR, the total forest area planted was 10,000 hectares annually. This increased to 83,000 hectares by the end of 1993. Virgin forest currently accounts for less than 20 percent of the total forest area due to an extended period of exploitation of the forest for agriculture and timber (NTDB 1996). Expansion of agricultural lands from 3.1 million hectares in 1965 to well over 7 million hectares in 1990, has resulted in a significant increase in the rate of deforestation (Borota 1991). Thus, between 1977 and 1987, Côte d'Ivoire lost 42 percent of its forest and woodland, the highest loss by far in the world. The same figures for neighboring Ghana and Liberia, were 8 percent and 1 percent, respectively, and for Brazil, 4 percent. It is projected that by the end of the century, at current rates of deforestation, Côte d'Ivoire will have lost more than 83 percent of its virgin forest (Borota 1991).

Côte d'Ivoire has 253 major forest areas as follows (see Appendix C for a map of forest areas of Côte d'Ivoire):

8 National Parks with a total area of 1.7 million hectares (4.2 million acres):

- Mont Peko 34,000 hectares (84,017 acres)- created in 1968
- Banco 3,000 hectares (7,413 acres)- created in 1953
- Marahoue 101,000 hectares (249,581 acres)- created in 1968
- Comoe 1,150,000 hectares (2.8 million acres)- created in 1968
- Tai 340,000 hectares (840,174 acres)- created in 1972
- Mont Sangbe 95,000 hectares (234,754 acres)- created in 1976
- Eotilees Islands 500 hectares (1,236 acres)- created in 1981
- Azagny 19,400 hectares (47,939 acres)- created in 1981

Among all National Parks, the National Park of Comoe remains the most important park in total area (1,150,000 hectares).

5 reserves of fauna and flora which have a total area of about 247,000 hectares (610,362 acres) as follows:

- N'zo 96,000 hectares (237,226 acres)- created in 1972
- Haut Bandama 123,000 hectares (303,945 acres)- created in 1973
- Abokouamekro 20,430 hectares (50,485 acres)- created in 1993
- Mont Nimba 5,000 hectares (12,356 acres)- created in 1944
- Lamto 2,500 hectares (6,178 acres)- created in 1968

Finally, 240 classified forests have an area of about 3.6 million hectares or 8.9 million acres (Agbatou 1997). To be able to manage harvesting operations, the government has granted licenses to logging companies to operate in the classified forests. A classified forest is defined as use only for forestry and not for agriculture. The classified forests comprise various concessions ranging from 2,500 hectares (6,178 acres) to 25,000 hectares (61,778 acres) which are called "Perimetres". They are assigned to approved logging companies for a period of 5 to 30 years according to the financial strength of the logging company.

The total logging area in classified forests is currently estimated to be 2.9 million hectares (7 .2 million acres), of which 1.6 million hectares (3.9 million acres) are in the south and 1.3 million hectares (3.2 million acres) are in the savannah area in

northern Côte d'Ivoire. The major forest stands are located in the south, the west and the southwest (NTDB 1996). Since February 1992, the classified forest was brought under the sole management of SODEFOR (NTDB 1996).

Causes and Problems of Deforestation

In Côte d'Ivoire, deforestation is seen as a severe environmental problem. The main reasons are expansion of agricultural land, flexible immigration policies, a high natural rate of population growth, centralized government policies with highly unequal political and financial powers and a lack of well-defined property rights. Under colonial rule and before the 1960's, French policies encouraged Africans to produce agricultural commodities including wood products. Even today, with an independent Africa, the same colonial philosophy prevails. Africa, and in particular Côte d'Ivoire, produces more agricultural commodity crops for export than they grow to feed themselves. As a consequence, slash and burn farming practices to expand agricultural lands have been one of the primary causes of the high rate of deforestation in Côte d'Ivoire.

The forest products export industry that once fueled the economy of Côte d'Ivoire has almost disappeared. In the 1960's and 1970's, Côte d'Ivoire enjoyed a phenomenal economic expansion as its rich tropical hardwood forests yielded export earnings of US $300 million a year (Borota 1991). But, as is the case in many developing countries that did not practice sustainable forestry, clear cutting decimated its forest and exports dropped to US $30 million a year in the early 1990's. The loss of this major source of employment and export earnings, coupled with falling cocoa

prices, led to a steady decline of the economy. From 1980 to 1994, per capita income fell by 50 percent (Borota 1991).

In 1992 the government, in order to stop or slowdown further encroachment on the forest, set up a commission known as "paysan-forest" at various classified forest zones. Since 1992, the primary objective is to educate farmers with regard to the need to preserve the forest and to better understand the effects of their activities on the forest (NTDB 1996). As a result, farmers already using the classified forest will be allowed to continue to do so if they are willing to cooperate with the government. In exchange for their activities in the classified forest, farmers must undertake tree planting to offset what has been cut. In this regard, stakeholder groups such as wood professionals, forest managers (SODEFOR), and forest policymakers have full responsibility to supply management input and to monitor compliance.

Forests and Rural Development

Since the independence of Côte d'Ivoire, economic growth has largely bypassed the rural population as their incomes and opportunities still remain at abysmally low levels. A vast majority of the rural population is living today with limited means of satisfying their most basic needs. Thus, more than 80 percent of the people in Côte d'Ivoire live in conditions of poverty (Brown 1988).

Economic expansion has failed to benefit many Ivorians because economic development strategies have concentrated exclusively on promoting the growth of total output and ignoring the adverse effects (such as deforestation, erosion, and even heavy debts that the country has incurred) of such expansion. In the past, it was assumed that traditional policies would eventually improve the position of the underprivileged

relative to the upper classes. Unfortunately only a privileged few urban-industrial "islands" (about 1 percent of the total population) benefited.

The indigenous population has tended to be discriminated against by the elite middle and upper classes and policymakers who are most susceptible to the pressures of organized and vocal non-rural groups. Thus, "the disparate distribution of natural resources, income, political power and opportunities has left the poor rural people alienated from the mainstream of society" (Schmink 1987). The concept of development discussed above (such as promoting the growth of total output and ignoring the effects) is progressively being replaced by a new concept of development which integrates both economic growth and social objectives.

The creation of SODEFOR in 1966 brought a new approach to forest development as a realistic forest planting activity with forestry strategies geared toward inclusive objectives (NTDB 1996). Tropical high forests are being converted to be more productive perennial tree crops (oil palm, coconut, cocoa and rubber). As a result, "a quantifiable increase in rural incomes has been achieved and the farmers involved have improved their earning power, compared with their former dependence on shifting cultivation" (Spears 1981). The 100,000 hectares (247,110 acres) of perennial tree crops today provide an effective catchment cover, and the productivity of the land has also been enhanced. As a result, economic rates of return have been more attractive than originally anticipated. This has had a beneficial impact on rural incomes, but at a modest level by comparison with agricultural projects. Today, the forestry plantation scheme employs about 5 families per square kilometer, compared with 2 families per square kilometer for forestland under shifting cultivation, about 30

families per square kilometer for oil palm, rubber, or coconuts grown under plantation conditions, and 50 families per square kilometer for smallholder agricultural commodity crops production (Spears 1981).

Timber Production

The production of timber was at one time of major importance to the Ivorian economy. In 1993, total Ivorian exports were US $2.7 billion and tropical wood products accounted for 11 percent (or US $297 million) of export revenue, falling behind cocoa at 30 percent (or US $810 million) and coffee at 20 percent (US $540 million). Most important export timber species are acajou (Khaya Ivorensis), iroko (Chlorophora excelsa), Sipo (Entandrophragma utile), bahia (Hellea Ciliata), and makore (Dumoria). Nearly thirteen million cubic meters (13 billion board feet) of logs were produced for export annually in the late 1980s and early 1990s.

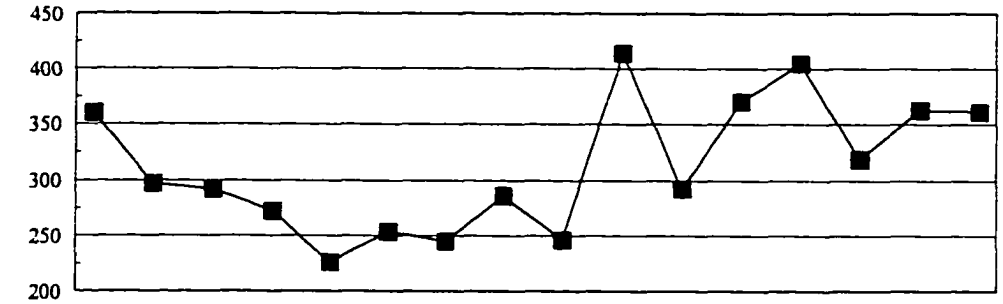
It is important to note that the indigenous Ivorian timber species are all hardwoods, and natural forests are mixed stands of a wide variety of species. Plantation forests account for only 20 percent of mixed stands with major species planted being teak (Tectona grandis), frake (Terminalia superba), samba (Triplochiton scleroxylon), pine (Pinus spp.), cedar (Juniperus procera), gmelina (Gmelina arborea), niangon (Tarrietia utilis), and framire (Terminalia Ivorensis).

The area under SODEFOR management in 1993 was 2.6 million hectares (6.4 million acres) from a project total area of 3.6 million hectares (8.9 million acres), consisting of 3.5 million hectares (8.7 million acres) of classified forests and 93,000 hectares (229,812 acres) of plantation forests (NTDB 1996).

The government's main goal is to have a permanent forest zone maintained at 20 percent of total forest area by 2015, about 6.4 million hectares (15.8 million acres), up from the current level of 14 percent or 4.5 million hectares (11.1 million acres). If successful, the forest ecological equilibrium of the country is projected to be maintained at a sustained production of 4 million cubic meters of timber annually (NTDB 1996).

Côte d'Ivoire Wood Products Production and Commercialization

This section offers a brief overview of wood products production, consumption and export trends for selected products. Côte d'Ivoire is traditionally known as one of the African "wood baskets" because it is well endowed in utilizable timber and often supplies both domestic and international markets. Over the period 1981-1996, forest products trade annual revenue represents averaged US $313 million. In 1990, Côte d'Ivoire earned nearly US $414 million, the highest revenue earned in sixteen years (Figure 2). Côte d'Ivoire exports wood products such as roundwood, plywood, veneer sheets, and sawnwood, representing about 11 percent of the total export revenue for the country. But with seven percent of current annual rate of deforestation in Côte d'Ivoire, the highest in the world, the country has lost almost 83 percent of the 16 million hectares of tropical forests that existed in 1960 (Repetto and Gillis 1988). As a result, forest industry will never be seen again as the main source of government revenue. Rather forest industry would become a liability for the Ivorian government in coming years.



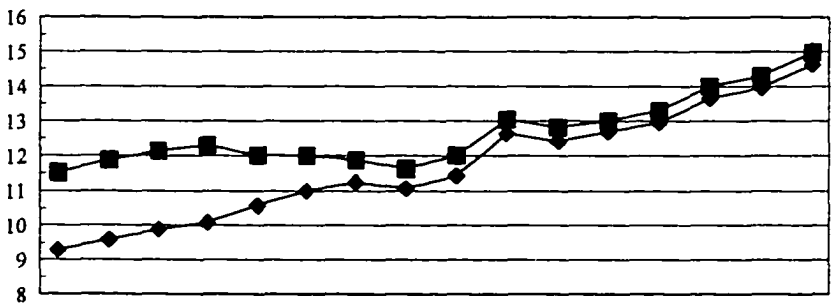
Year	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
	360.0	297.2	291.8	272.3	226.0	253.8	245.1	286.3	246.4	414.0	292.5	370.1	404.8	319.1	362.6	361.1

Figure 2: Côte d'Ivoire Total Wood Products Exports 1981-1996 (Value: $Million US)

Source: FAOSTAT Database Results 1997.

Roundwood Production and Domestic Consumption

As shown in Figure 3, Côte d'Ivoire is a net exporter of roundwood and ranks second only to Malaysia in the trade of roundwood among the tropical wood producing countries (Laarman and Sedjo 1992). Its domestic consumption of roundwood has steadily increased from 81 percent of production in 1981 to reach a highest of 98 percent of production in 1995 and 1996.



Year	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Production ■	11.5	11.9	12.1	12.3	12.0	12.0	11.9	11.6	12.0	13.1	12.8	13.0	13.3	14.0	14.3	15.0
Consumption ◆	9.3	9.6	9.9	10.1	10.6	11.0	11.2	11.1	11.4	12.6	12.4	12.7	13.0	13.7	14.0	14.6

Figure 3: Côte d'Ivoire Roundwood Production & Consumption 1981-1996 (Volume: Million Cubic Meters)

Source: FAOSTAT Database Results 1997

Hardwood Log Exports

As shown in Figure 4, Ivorian hardwood logs are exported to three main regions of the world, the European Union, Asia, and Africa. Among all three regions, the European Union with 62 percent of market share, remains the main trading partner of Côte d'Ivoire in hardwood logs. The European market is traditionally well known for its attraction of African valuable hardwoods. In 1994, Côte d'Ivoire exported a total of 233,526 cubic meters to the European Union. Spain had 45 percent of the market share, followed by France (30 percent), Italy (14 percent) and Portugal (11 percent). A total of 91,361 cubic meters of hardwood logs were exported in Asia in 1994. Thailand and India dominate Ivorian hardwood logs exports to Asia with 74 percent of market share. China and Japan captured 14 percent and 12 percent of market share, respectively, in the same year. In 1994, a total of 26,511 cubic meters of hardwood logs from Côte d'Ivoire were exported to Africa; Senegal had 65 percent of the market share followed by Tunisia with 35 percent. Data indicate that Senegal is the main hardwood log trading partner of Côte d'Ivoire in Africa.

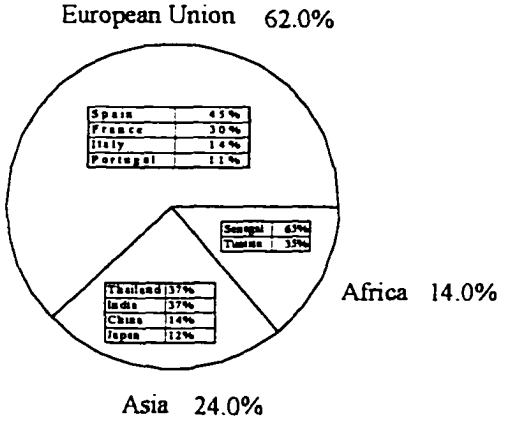
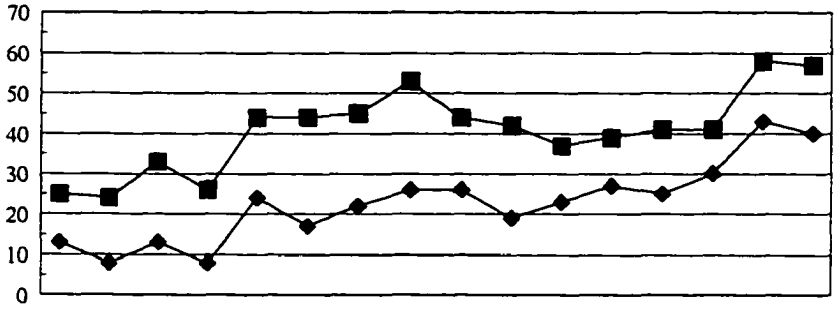


Figure 4. Côte d'Ivoire 1994 Hardwood Logs Exports
Total= 376,395 Cubic Meters

Source: USDA, Foreign Agricultural Service. Attache Reports. Côte d'Ivoire; Forest Products Annual: Annual Report 1996

Plywood Production and Domestic Consumption

Figure 5 shows Côte d'Ivoire plywood production and consumption in cubic meters. Between 1981 and 1988, production increased to 53 thousand cubic meters before declining to 39 thousand cubic meters in 1992. From 1994 to 1995, production increased 41 percent to 58 thousand cubic meters. Consumption increased 208 percent over the 1981-1996 time period and went from 52 percent of production in 1981 to 70 percent of production in 1996. Overall, Côte d'Ivoire has been a net plywood exporter although the country imported 2 thousand cubic meters in 1993. This growth was due to the rebound of the economic activities and in part the devaluation of the CFA Franc, the local currency.



Year	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Production ■	25	24	33	26	44	44	45	53	44	42	37	39	41	41	58	57
Consumption◆	13	8	13	8	24	17	22	26	26	19	23	27	25	30	43	40

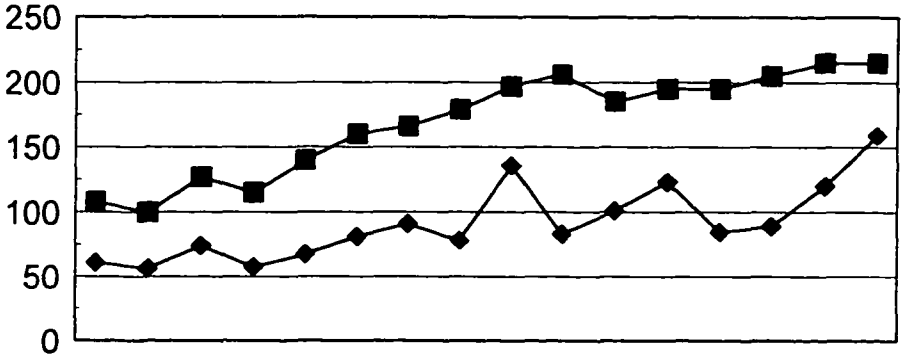
Figure 5: Côte d'Ivoire Plywood Production & Consumption 1981-1996 (Volume: Thousand Cubic Meters)

Source: FAOSTAT Database Results 1997

Veneer Sheets Production and Consumption

Figure 6 shows veneer sheets production and consumption in cubic meters. Between 1981 and 1996, the production of veneer sheets doubled to be 215 thousand cubic meters from 108 thousand cubic meters in 1981. This remarkable growth of the

production of veneer sheets may be due to the rebound of the economy after 1994. The consumption of veneer sheets increased by 160 percent between 1981 and 1996. As is the case with other products, this growth was due in part to the devaluation of the local currency (CFA Franc).



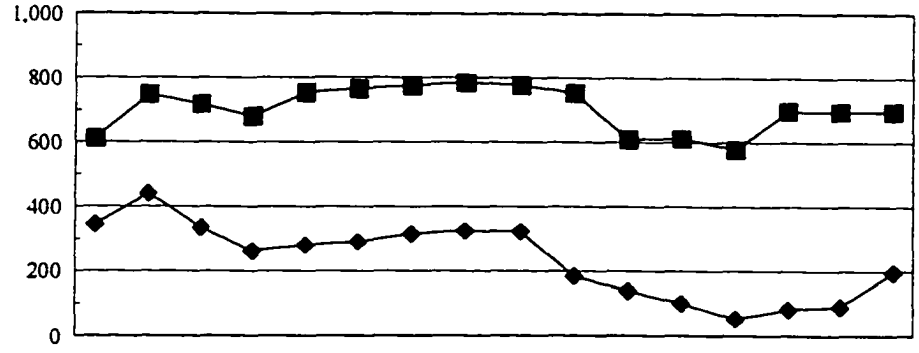
Year	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Production	108.0	100.0	127.0	115.0	140.0	160.0	166.0	179.0	197.0	206.0	185.0	195.0	195.0	205.0	215.0	215.0
Consumption	61.0	56.5	74.0	57.5	67.8	81.1	90.9	77.9	135.7	83.0	101.0	122.9	84.7	89.1	119.9	158.7

Figure 6: Côte d'Ivoire Veneer Sheet Production & Consumption 1981-1996 (Volume: 1,000 Cubic Meters)

Source: FAOSTAT Database Results 1997

Sawnwood Production and Consumption

Figure 7 shows sawnwood production and consumption in cubic meters. Between 1981 and 1996, sawnwood production has been virtually constant. On the other hand, domestic consumption declined from 1981 to 1993 before beginning an increase that continued through 1996. Consumption as a percent of production has declined dramatically from 56 percent in 1981 to 9 percent in 1993. Conversely, exports have steadily increased to reach 696 thousand cubic meters, or 72 percent of production in 1996.



Year	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Production ■	611	748	718	679	753	765	775	784	777	753	608	611	577	698	696	696
Consumption ◆	345	440	335	261	280	290	315	324	322	183	138	100	53	82	90	196

Figure 7: Côte d'Ivoire Sawnwood Production & Consumption 1981-1996 (Volume: Thousand Cubic Meters)

Source: FAOSTAT Database Results 1997

Fuelwood Production and Consumption

Figure 8 shows fuelwood and charcoal consumption in cubic meters. Côte d'Ivoire does not export nor import fuelwood and charcoal, having a sufficient supply for domestic energy needs. Over the 1991-1996 period, consumption has increased linearly to 12 million cubic meters in 1996.

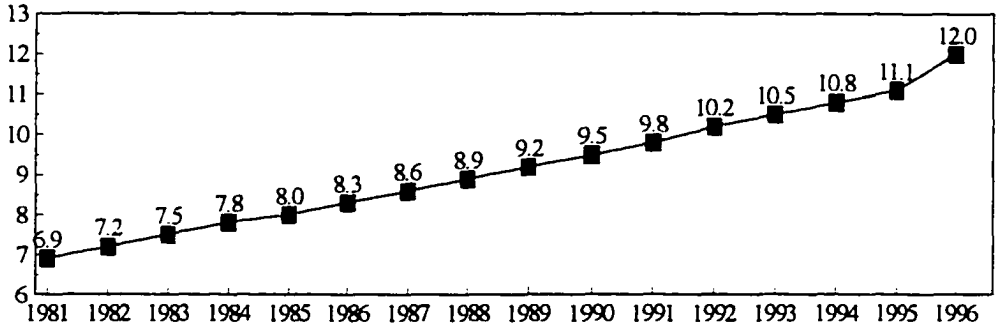


Figure 8: Côte d'Ivoire Fuelwood & Charcoal Consumption 1981-1996 (Volume: Million Cubic Meters)

Source: FAOSTAT Database Results 1997

Summary

Côte d'Ivoire has lost almost 83 percent of its 16 million hectares (39.5 million acres) of tropical forest that existed in 1960. Expansion of agricultural lands remains the fundamental contributor to deforestation in Côte d'Ivoire. Other factors include a high natural rate of population growth (3.9 percent annually) and flexible immigration policies that create land use pressures. Some corrective actions such as halting illicit harvesting, reforestation and reforming logging activities have not addressed the fundamental factors leading to forest depletion.

While virgin forest currently accounts for less than 20 percent of the total forest areas, regenerated forest comprises for only 2 percent of total area in Côte d'Ivoire. Economic expansion concentrated exclusively on promoting the growth of total output has failed to benefit many Ivorians, mainly the indigenous people.

The production of timber was, at one time, of major importance to the Ivorian economy. But, due to the wood products trade restrictions to control the deforestation effect in Côte d'Ivoire, wood production and commercialization have fallen behind, and Europe still remains the major trading partner of Côte d'Ivoire.

References

ADB. 1990. Overview of an Environmental Problems in Regional Member Countries. Policy paper . Abidjan, Côte d'Ivoire.

Agbatou, Yao. 1997. Gestion Forestiere en Côte d'Ivoire Quelle Realite. Conference Paper. Abidjan, Côte d'Ivoire.

Borota, Jan. 1991. Tropical Forests. Some African and Asian Case Studies of Composition and Structure. Elsevier Science Publishers, Amsterdam, The Netherlands.

Brown, Janet W.. 1988. Poverty and Environmental Degradation: Basic Concerns for US Cooperation with Developing Countries, Washington DC, USA, World Resources Institute.

FAO. 1990. Committee on Forest Development in the Tropics. Tropical Forestry Action Plan. Rome, Italy.

FAO. 1983. Fuelwood Supplies in the Developing Countries. FAO Forestry Paper 42. Rome, Italy.

Hillgartner Gunnar. 1995. Electronic Database: Côte d'Ivoire home page. Economie/Economy.

Laarman, Jan G. and Roger A. Sedjo. 1992. Global Forests: Issues for Six Billion people. McGraw-Hill, Inc.. New York, New York.

National Trade Data Bank. 1996. USDA, Foreign Agricultural Service. Agworld Attache reports. Ag Agworld IV5028

Plumpwood, V. 1982. World Rain Forest Destruction: the Social Factors in the Ecologist, Vol.12, No.1

Repetto, Robert and Malcolm Gillis (eds.). 1988. Public policies and the Misuse of Forest Resources. Cambridge University press, Cambridge.

Report of an International Task Force convened. 1993. By the World Resources Institute, the World Bank, and the United Nations Development Programme.

Spears, S. John. 1981. In "Tropical Forests Utilization and Conservation". Ecological, Sociopolitical and Economic Problems and potentials. Edited by Francois Mergen. Yale University, School of Forestry and Environmental Studies. New Haven, CT.

Schmink, M. 1987. The Rationality of Forest Destruction- Pages 11-30 in J.C. Figuroa, F.H. Wadsworth, and S. Branham, editors. Management of the forests of tropical America: Prospects and Technologies. Institute of Tropical Forestry, Rio Piedras, Puerto Rico.

USDA, Foreign Agricultural Service. 1996. Attache Reports. Côte d'Ivoire. Forest Products Annual: Annual Report.

Wagner, R. Michael and Joseph R. Cobbinah. 1993. Deforestation and Sustainability in Ghana. The Role of Tropical Forests. Journal of Forestry. Volume 91, PP 37-39.

CHAPTER 2

GOVERNMENT FOREST POLICY ISSUES IN COTE D'IVOIRE

Introduction

Agriculture remains the main source of national income in Côte d'Ivoire. Consequently, there is clear evidence that natural forests are being cleared at an exceedingly rapid rate (300,000 hectares per year) for shifting cultivation and increasing demand for land, fuelwood and commercial timber. Even though some corrective actions, such as halting illicit farming, reforesting the gazetted forests and reforming logging activities were implemented to rescue its forest resources, present policies have not adequately countered with forest degradation in Côte d'Ivoire (African Development Bank 1990).

This chapter contains a review of government policies intended to prevent the destruction of forest resources in Côte d'Ivoire. A major issue is whether Côte d'Ivoire can have sound forestry legislation in the light of development priorities which are mainly centered around agriculture. For these two areas to coexist, policies need to promote intensive methods of farming while avoiding negative impacts on the forestland area.

To a considerable degree, the policy drawbacks arose despite well intentioned development goals. The shortcomings often resulted from failures of understanding and execution. This chapter reveals some explanations for government policies that have erred in the direction of wasteful use of forest resources. For example, excessive benefits from forests have been consistently undervalued by policymakers and the

general public. And since forest resources are undervalued, they are inevitably misused.

Historical Perspective Of Land Tenure Policies

Private claims and the acquisition of land title in Côte d'Ivoire were historically based simply on evidence of active land use (Heath 1993). Early period colonial rules allowed French authorities to claim all vacant and uncultivated lands under the decree of July 20, 1900. This act denied the indigenous farmers ownership of land not under cultivation. The main reason of the decree was to increase landownership among French colonists (Heath 1993). This vision of colonial administration was furthered by the decree of July 25, 1932, which stressed legal procedure for obtaining individual freehold title to land. A subsequent decree, dated November 15, 1935, reaffirmed the principle that all lands not under cultivation belonged to the state.

In addition, the decree of 1935 stipulated that even land under customary law which was currently in use could be expropriated by the state if there were an economic justification for doing so. On the basis of this policy, the colonial administrators settled migrants (mainly Baoule and Senoufo) in central and northern Côte d'Ivoire, without seeking the permission of the local inhabitants (Heath 1993). Their objective was to stimulate the production of main cash crops such as coffee and cocoa which the indigenous farmers were slow to take up (Raulin, H. 1957; Hecht 1981).

This decision was systematically reversed by the decree of May 17, 1955 which rejected government claims to vacant land not under cultivation or unexploited. However, for anyone to stake a claim to a piece of land, it was important to show either that the land was not subjected to customary law or that the customary claimants had

waived their right to the land (Heath 1993). The Policy of 1955 may have been reflective of a general trend toward liberalization by the French authorities. The effect of the reversal was to stimulate a rapid acceleration of rural land transactions in areas that had, in principle at least, been part of the public domain (Heath 1993). As a result, private plantations were created and timber concessions were available to absentee landlords, European and Ivorian alike, who employed mostly migrant laborers. Changes to landownership tends to encourage "privatization," rather than strengthening traditional land rights. And this helps to explain, from an early date, a high incidence of land sales in the western forest (Heath 1993).

Land Tenure Legislation Following Independence

With independence acquired on August 7, 1960, and the promulgation of the new constitution, the government of Côte d'Ivoire reaffirmed land tenure laws inherited from France (Heath 1993). It was obvious that there remained a fundamental conflict between indigenous customs, which believe that landownership (as opposed to usufruct) is inalienable, and the emphasis on private freehold maintained by European legal traditions (Heath 1993). According to Webster's dictionary "usufruct is defined as Roman and civil law which gives the right of using and enjoying the fruits or profits of an estate or other thing belonging to another, without impairing the substance".

Finally, the government sought to establish the primacy of state rights and updated modern procedures over customary laws. A 1963 bill declaring that all lands that were not valued or unregistered were the property of the state was never formally promulgated. The most important government initiative remains the decree of March 20, 1967, stating that "land belongs to the person who brings it into production,

providing that exploitation rights have been formally registered." Coulibali and Sawadogo (1991) argued that the second clause of this decree tends to be overlooked; the 1967 edict (reaffirmed in the President's celebrated Daloa address of 1968) has been used by indigenous and migrants alike to legitimate the clearing of unoccupied land (Heath 1993). To continue with this philosophy, the government further sought to assert its claim to land by confirming that "the state is the owner of all unregistered land", "customary rights to land are abolished" and "no compensation will be paid to so-named customary owners" (Coulibali and Sawadogo 1991).

Early support for land registration has encouraged the government to take steps to ease the stringent requirements for acquiring land titles that were inherited from colonial authorities. However, while it intends to give the people ownership of the land, few could afford it. Full title can be obtained only after survey and registration work costing US $170 per hectare. As a result, less than one percent of the rural areas of Côte d'Ivoire have been thus registered (Heath 1993). The costliness of the process was a real barrier to obtaining full title. Thus, in practice, almost all forestlands remain subject to customary law and any attempt to utilize them or develop forestlands must take place with the explicit cognizance of the traditional authorities; matriculation or land registration carries little conviction with these indigenous authorities and is regarded as an illegitimate imposition by the state (Heath 1993). However, despite customary land claim of the traditional authorities, the state managed to mark a "permanent domain". Permanent domain is defined as "protected" areas covering about 2 million hectares (4.9 million acres) (six percent of the national territory), with about one-third of this area consisting of gazetted forest (Heath 1993). Gazetted forest

is defined as depleted forest. Such public domain lands have never been efficiently and effectively policed by the government, and traditional chiefs have remained the effective arbitrators of access (Heath 1993). Land claimed by the state is subjected to private appropriation from two sides: it is appropriated by politicians and leaders who use their powerful positions to become owners of land, and it is appropriated by migrants who acquire use rights from local chiefs in exchange for gifts and lately, monetary incentives. In many cases, the politicians end up acting as patrons and protectors of the clandestines who have moved onto state land (Heath 1993). The contradictions in the state's policy have given the clandestines a certain leverage. For example, in the 1970's, in a state park called Marahoue Park, SODEFOR evicted a group of clandestines, mainly Baoule, who had settled in the park and were depleting forest resources. However, shortly after their eviction, the clandestines were able to re-occupy the land after a successful appeal to the President (Heath 1993). Therefore, as long as politicians are involved in land transaction itself, public agencies will lack all credibility in the eyes of local chiefs.

Reorientation of Forest Policies of the 1990's

It is sometime hard to separate the agricultural policies from forest policies in Côte d'Ivoire, for the Ivorian economic development is essentially based on agricultural production which affects the forest utilization and management activities. Sustainable agricultural policies would definitively encourage sustainable forest utilization and management. Thus, to control the deforestation and to promote forest conservation, the government of Côte d'Ivoire has decided to promote its agricultural policies by offering high producer prices and easy credits to farmers to use more chemical inputs to be able

to produce commodity crops from the same plots on yearly basis. In 1995 alone, it provided US $4 million worth of chemical inputs subsidy and free seed supply to cotton farmers (NTDB 1996). Tariffs for the import of agricultural inputs were also reduced. In implementing its economic development policies, the government's new strategy shows a clear shift, one which now emphasizes productive sectors beyond agriculture to alleviate pressure on forestlands . This strategy is seen as a second era of government economic development focus, one which provides greatly expanded and stable prospects for growth and encourages economic development of Côte d'Ivoire's untapped mineral wealth (NTDB 1996). In this way the base of economic development will be diversified and forests conversion for agricultural use will be minimized. There is evidence that significant deposits of oil, gas, gold, nickel and other minerals are available. New policies and regulatory framework are being developed in order to promote growth in mining activities and to further develop the country's offshore hydrocarbon resources. Finally, with this new economic development strategy, pressure can be alleviated on the forestlands while sustainable forest management will be pursued and the economic growth will continue. In 1996, agricultural development maintained its dominant position and for that purpose the government allocated a capital budget of $178.85 million for agricultural investment projects. Strategies of development need to be changed. More investments in forestry need to be promoted for forest development programs in Côte d'Ivoire. Forest development programs should heavily rely on indigenous people as they are the ones using the forests. Table 2 shows the 1996 agricultural investment budget allocation. The budget shown is dominated by general support with $56.10 million .

Table 2. 1996 Agricultural Investment Budget Allocation (US $ million)

Item	Cost
Rubber	2.44
Coffee	9.00
Fruits	.22
Vegetables	.21
Rice	8.37
Other Food Crops	4.87
Animal Husbandry	15.30
Fisheries	.74
National Parks	4.40
Forestry	34.50
Integrated Operations	42.70
General Support	56.10
Total	**178.85**

Source: National Trade Data Base 1996. Data are converted from Franc CFA into US$. Exchange rate: US $1= 500 CFA.

Concession Policies

Government policies dictate log harvesting by the private sector. Forest concessions are issued by the Ministry of Agriculture and Wildlife Resources to applicants based on established conditions such as financial strength and entrepreneurial abilities. Individuals with inadequate financial resources to purchase processing facilities are granted licenses for a duration of five years with the possibility of renewal, while licenses granted to processing firms are generally given for a period of fifteen to thirty years. The number of licenses granted is determined according to the financial strength of the individual or company. It is the responsibility of the agents of the Ministry of Agriculture and Wildlife Resources to identify the number of concessions on which timber is available for harvest on a yearly basis. Only one third of the total concessions available are allowed to be harvested annually because of conservation concerns. The government of Côte d'Ivoire, as part of a goal to develop sustainable

forest management, organizes individuals with no processing facilities and affiliates them with various processing firms. As a result, timber harvested by these individuals may be purchased only by the affiliated firms. Under these conditions, all concessionaires are required to undertake development and long-term forest regeneration programs on their concessions.

Forest Regulations

Government regulations are geared towards reducing log exports. Since the early 1980s, the government of Côte d'Ivoire has established regulations to restrict the export of the most merchantable hardwood species. For example, in 1981 the government decided to place a ban on the export of iroko (Chlorophora excelsa) and sipo (Entandrophragma utile) logs, requiring that they be processed domestically to enhance the country's secondary wood processing industry, increase employment and add export value.

Following is the chronology of actions taken in the area of log exports:

- In January 1982, export quotas were instituted on logs of all species and log exporters were required to obtain an export allocation from the government.
- By April 1982, log exports from open woodland (savannah) and marginal forest areas of the northern and central parts of Côte d'Ivoire were prohibited. The government's goal of prohibiting log exports from open woodlands was only applied to the northern and central regions in order to improve the supply of logs to sawmills in those regions.
- In 1983, log exports from concessions allocated to the processing industry were prohibited.
- In 1984, the export tariff on hardwood logs was increased, raising the export price.
- In 1991, the government instituted a monthly auction system for log export quotas.
- In January 1992, the government published a decree to extend the ban on the export of logs to include species such as acajou (Khaya Ivorensis), avodire (Turraeanthus Africana), and makore (Dumoria spp.).
- In 1993, the export of all logs was placed on a quota basis.

And finally, in October 1995, Côte d'Ivoire instituted a total ban on the export of all hardwood logs except teak logs which are exported to be processed due to the lack of availability of modern technology.

Non-Forest Policies of the 1990's

Non-forestry policies in Côte d'Ivoire have caused more extensive forest destruction than "misdirected" and "misapplied" forestry policies have. Most obvious are the effects of policies leading directly to physical intrusion in natural forest areas (Repetto and Gillis 1988). These include agricultural programs under which production has been encouraged by government subsidy, through recently established social programs. The goal is to encourage young people to enter agricultural production. As a result, a special delegated Ministry was established in 1994 under the Ministry of Agriculture. This newly created Ministry has been set up to promote the entry of young people into farming. Consequently forestland depletion will continue to persist.

Many such projects are politically driven and have questionable economic worth, even apart from the forest and other natural resources losses they impose (Repetto 1988). For example, agricultural expansion policies overemphasize cash crop production at the expense of other potential benefits and forego potential long-term benefits for lesser transitory gains. Potential benefits from forest exploitation are dissipated in agricultural expansion. Despite official endorsements of conservation goals, government policies contribute significantly to the rapid deforestation now under way in Côte d'Ivoire. Why were these policies adopted, and why do they persist? The answer lies in policies which are intended to reward special interest groups such as the

"elites" in power. Also the existence of vast commercial rubber, coffee, cocoa and palm oil plantations, and large resources from harvesting timber attracted elites as well as businessmen, usually Lebanese and Italian, to the opportunities for immediate gains (Repetto 1988).

Forestlands have been exploited for a few valuable commodities, ignoring other tangible and intangible benefits (Repetto 1988). Natural forests serve both protective and productive functions. Forests have been exploited as if only two resources were of significance: the agricultural land and timber (Repetto 1988). As a result, the capacity of the natural forest to supply a perpetual stream of valuable non-wood products that can be harvested without damaging trees, has been overlooked. These include such commodities as nuts, fibers, oils, honey, plants and animal products. In forest resources and economic development, these products need to be taken into account as well, since their economic strength and contribution to development on a local and community level may be extremely important.

Development planners have proceeded to exploit forest resources for commodity production without adequate biological knowledge of their potential or limitations or awareness of the economic consequences of the country's development policies (Repetto 1988; Anonymous 1993). The values of many tree species are not known, so most trees are treated as weeds and destroyed during logging, shifting cultivation and bush fires.

Another area of concern is land-tenure policies that stimulate deforestation. The most direct are "tenurial" rules that assign property rights where the planting of crops such as coffee and cocoa for example, provides a recognized claim to ownership or

control of land. Such practices have encouraged small farmer expansion into forested zones and some "elites" to amass large forest holdings (Lumpungu 1977, Repetto 1988 and Laarman et al. 1992).

Externally Funded Forest Sector Development Programs

Programs of forest rehabilitation are mainly financed by foreign donor agencies. In 1995, the government of Côte d'Ivoire's development budget for the forest sector was US $15.2 million from which US $13 million were provided by foreign donor agencies (NTDB 1996). This budgetary allocation is to enable La Societe Pour le Developement des Plantations Forestieres (SODEFOR), the forest management agency, to continue its program to manage, protect and regenerate the classified forest area and to pursue forest plantation programs.

The 5-year sectoral forest project, started in 1991, is the country's largest forest development project financed by the World Bank and the Commonwealth Development Corporation at a total cost of US$48 million. The project involved demarcating an area of 1.5 million hectares (3.7 million acres) as classified forest, restoring 700,000 hectares (1.7 million acres) of forest, maintaining 55,000 hectares (135,910.5 acres) of forest and planting a new forest on 9,000 hectares (22,240 acres) of land (NTDB 1996). Other projects which concern mainly forest replanting include an African Development Bank forest project in the north and central regions, funded at US $3.8 million in 1995 and a French Caisse for Development project in the southeast, with an allocation of US $1.75 million for forest management. Out of 1995 budget of $15.2 million Côte d'Ivoire allocated $2.2 million and $13 million came from external funding for forest

regeneration programs. This means that Côte d'Ivoire alone can not afford forest maintenance programs.

Conclusion

Much needs to be known about potential regeneration of currently valuable tree species and successful management of heterogeneous natural forest for sustained yields. Lack of knowledge in forest utilization may confirm the assertion that the forest may hold unknown treasures. Problems associated with forestland ownership are in part rooted in French colonial rules under which vacant lands were government property. Forest policies and forest laws have to be continually reversed, updated and adapted to social conditions if they are to remain relevant. Land acquisition and utilization laws should be clearly defined to responsibilize indigenous people in their behavior of viewing land as a commodity. This way, wasteful forest utilization will be prevented and sustainable forest utilization and management will be promoted in Côte d'Ivoire.

Government should secure the participation of all stakeholders in forest utilization and management, and in formatting present-day policies and/or laws, while ensuring sustainability of its forest resource through safeguards on control. Programs of economic development should be well assessed to guarantee short-term and long-term benefits and improve the position of the underprivileged relative to the upper classes.

Since agriculture remains one of the main sources of national income, sound agricultural policies should positively affect forest utilization and management practices in Côte d'Ivoire. It is also important that forest policymakers take in consideration local customs and traditions, and even be able to assess the needs of indigenous people

while formulating forest policies. The adaptation of colonial land tenure policies should only be necessary when it is beneficial both to the society and to the economic growth. Government should stop to promote the idea that "natural forestland does not belong to anyone but to the individuals who value it" in that way, people will not compete among themselves to acquire forestland that is already scarce in Côte d'Ivoire.

Thus, the successful development policy strategies should not exclude forest utilization and should integrate and emphasize both economic growth and social objectives for the well-being of the citizens and the health of the ecosystem in Côte d'Ivoire.

References

Anonymous. 1993. Tropical Forests: A Call for Action. Report of an International Task Force Convened by the World Resources Institute, the World Bank, and the United Nations Development Program.

African Development Bank. 1990. Overview of an environmental problems in regional member countries. Policy Paper. Abidjan, Côte d'Ivoire.

Anonymous, No Date. Ministere de l'Agriculture et des Ressources Animales. Politique de Rehabilitation du Secteur Forestier en Côte d'Ivoire. Abidjan, Côte d'Ivoire.

Chambers, Robert. 1988. Rural Development: Putting the Last First. Longman Scientific and Technical, London.

Coulibali and A. Sawadogo. 1991. Etude sur le Milieu Naturel en Côte d'Ivoire. Abidjan: World Bank, Agricultural Section (processed).

Heath, John. 1993. Land Rights in Côte d'Ivoire. Survey and Prospects for project intervention. Technical paper number 238. Washington, DC: World Bank.

Hecht, Robert M. 1981. "Cocoa and the Dynamics of Socio-Economic Change in Southern Ivory Coast". Ph.D. dissertation, Cambridge University, United Kingdom.

Korten, David C. and Rudi Klauss, eds. 1984. People Centered Development: Contributions Toward Theory and Planning Frameworks. Kumarian Press, West HartFord, Connecticut.

Laarman, Jan G. and Roger A. Sedjo. 1992. Global Forests: Issues for Six Billion People. McGraw-Hill, Inc., New York, New York.

Marshall, G. 1993. "Communities as Resource Management Institutions". Gatekeeper Series, No. 36. International Institute for environment and Development, London.

Lumpungu, K. 1977. "Land Tenure System and the Agricultural Crisis in Zaire", African Environment 2/3:57-71.

National Trade Data Bank. 1996. USDA, Foreign Agricultural Service. Agworld Attache Reports. Ag Agwrld IV 5028.

Raulin, H. 1957. Mission d'Etude des Groupements Emmigres en Côte d'Ivoire. Paris: ORSTOM (Fascicule 3) (Processed)

Repetto, Robert and Malcolm Gillis (eds.). 1988. Public Policies and the Misuse of Forest Resources. Cambridge University press, Cambridge.

Uphoff, Norman. 1992. "Local Institutions and Participation for Sustainable Development". Gatekeeper Series, No. SA31. International Institute for environment and Development, London.

World Resources Institute (WRI). 1995. Lessons From The Ground Up. African Development that Works.

CHAPTER 3

RESEARCH MODEL AND HYPOTHESES

Introduction

The integrated theoretical model of communication developed in this chapter shown in Figure 9 explains the importance of communication as it is related to forest utilization and management practices. Communication is the transmission of common understanding through the use of use of symbols (Donnelly et al. 1984). Whereby information sources and receivers are engaged in encoding and decoding messages. Human communication can also be viewed as a process of constructing shared realities creating shared meanings. It is an attempt to have others understand our world as we do and to assign meaning to the world of those around us (Shockley-Zalabak 1994).

Fundamental concepts of communication and interaction are key to understanding stakeholders communication in the theoretical model in this study. Stakeholders are described as dynamic groups which engage in collective efforts for goal achievement (Euske et al. 1987). Communication among stakeholder groups is both equal to and distinct from other types of communication by involving all stakeholder groups in the decision-making processes.

Like other forms of communication, stakeholder communication is related to individual stakeholder group competencies, experience, the communicative context and effects or results of interactions. It is the process through which stakeholder groups create and shape events (Shockley-Zalabak 1991). Communication among stakeholder groups is also the creation and exchange of messages specific to the common area of interest. It is the movement or transmission of verbal and nonverbal behaviors and the

sharing of information among stakeholder groups. Communicators are connected together and messages are described with terms such as frequency, amount and type. According to Shockley-Zalabak (1994), there are four primary theories or concepts are identified in the process of understanding communication:

- the mechanistic theory
- the human relations theory
- the systems-interaction theory
- and the interpretive-symbolic-culture theory.

The four primary theories are described as follows:

The Mechanistic Theory

According to Shockley-Zalabak (1994), this approach to communication is a classical theory based on the analogy of the well-tooled machine operating with quality precision. The key activities, according to this analogy, are planning, design, and maintenance of structures and activities. This theory stresses order, and rationality in management processes (Kreps 1990). Communication from the mechanistic approach is designed to facilitate task completion and communication activities are specialized. Communication trains workers and gives daily instructions concerning job requirements (Shockley-Zalabak 1994).

The Human Relations Theory

In the sustainable forest utilization and management context, the human relations theory emphasizes the interaction among stakeholder groups, their motivations, and influence on forest industry issues. Human relations theory assumes that work is achieved through people and emphasizes cooperation, participation, satisfaction, and interpersonal skills. Communication is then a cornerstone of the

human relations theory (Shockley-Zalabak 1994). Under this theory, peer-group interaction is recognized, encouraged and viewed as potentially positive for productivity. Formal and informal communication networks carry task and social support messages. Interactions at all levels are promoted and expected to be extensive. Communication remains fundamental in decision-making processes.

The Systems-Interaction Theory

Donnelly (1984) argues that the systems-interaction theory attempts to explore how people, technologies and environment integrate to influence goal-directed behavior. This theory describes how complex processes, such as decision-making, influence the internal operation of stakeholder groups and are influenced by external environments. Thus, the systems-interaction perspective promotes a communication system in continual adaptation to changing circumstances.

The Interpretive-Symbolic-Culture Theory

Huber and associates (1987) believe that under this theory, the communication process explains how organizational members collectively interpret the organizational world around them in order to define the importance of organizational happenings. Members explain organizational behavior in terms of the influence of cultures that exist both internally and externally to the organization.

Although all primary theories or concepts of communication are important and relevant to some degree, the human relations theory seems to fit the theoretical model explaining the relationships among the stakeholders in this study.

Low levels of communication among stakeholders may negatively affect stakeholder behaviors and attitudes as they are related to forest utilization.

Consequently, land farming by stakeholders may be unsustainable and careless logging operations may be encouraged. Unsustainable forest utilization for fuelwood and charcoal production, forest fires and wood products production may be dominant. Communication among stakeholders could contribute to the goals of sustainable forest utilization.

Since stakeholder behaviors and attitudes influence forest utilization, which in turn determines outcomes, a low level of communication among stakeholder groups promotes deforestation. Incorrect communication between policymakers and other stakeholders would emphasize help to create a balanced ecosystem.

The model identifies five stakeholders: policymakers, forest managers, indigenous people, university officials and wood products manufacturers. The following summary describes each of the stakeholders, the potential relationships among them and an analysis of the effects of stakeholders' attitudes and behaviors on forest utilization. The model describes the communication linkages and interactions among stakeholders in the context of sustainable forest resources and economic development in Côte d'Ivoire. The model also emphasizes two-way communication among stakeholder groups promoting sustainable forest resources utilization and management practices. A sound communication among stakeholders would efficiently influence forest resources utilization to guarantee positive outcomes such as minimization of deforestation effect and maximization of forest regeneration and protection in Côte d'Ivoire.

Finally, the model described provides an opportunity to formulate 20 hypotheses based on communication supporting the research.

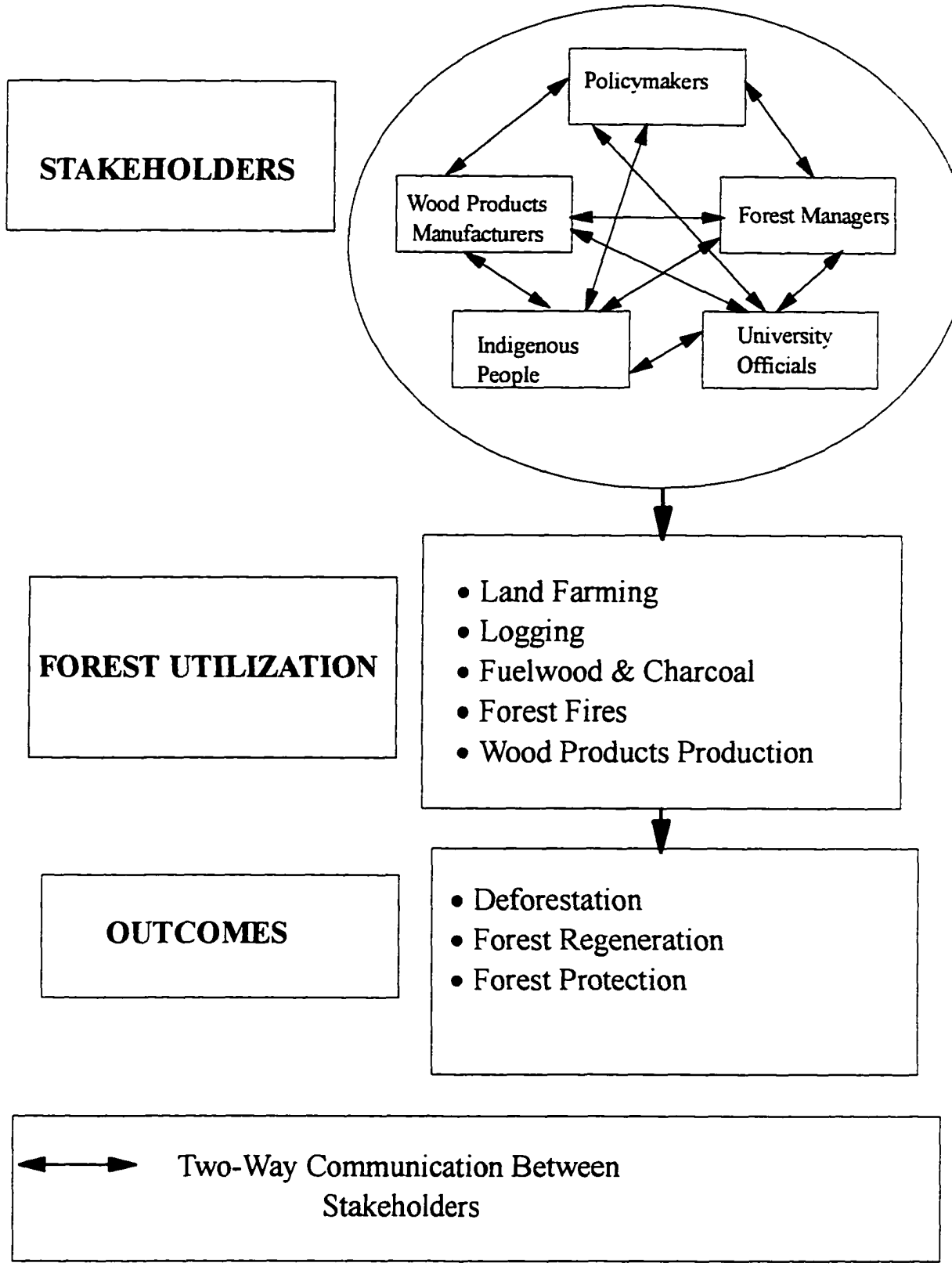


Figure 9. Theoretical Model of the Relationship Among Forest Stakeholders, Forest Utilization and Outcomes

Stakeholder Groups

Policymakers

Policymakers are government officials who propose forest legislation, concession policies and manage the rural domain defined as non-classified forests used for forestry and agriculture.

Forest Managers

Forest managers represent a government plantation forestry agency called La Societe Pour Le Developement Des Plantations Forestieres (SODEFOR). Their mission is to manage the Ivorian classified forests also called the "Permanent Domain". They protect, regenerate and harvest timber from their industrial plantations. Their actions with regard to forest utilization have limited negative impact compared to those of the other stakeholders such as indigenous people and wood products manufacturers.

Indigenous People

"Indigenous people" refers to a rural community whose principal economic activities are based on land cultivation. They include native and migrant populations. Most indigenous people are small plantation owners and their main techniques of forest utilization are slash and burn and shifting cultivation. They collect fuelwood for cooking and lighting and sometimes they are involved in setting forest fires while hunting. Their actions on forest utilization are more detrimental than those of any other stakeholders. Indigenous people represent the less educated group, have a minimun earning power and live at close proximity of the forestland.

Wood Products Manufacturers

Wood products manufacturers are business units which are involved in timber and wood products production. They obtain concessions from policymakers to harvest timber and they then process the logs into wood products. Their actions on forest utilization are often detrimental in terms of the destruction of the ecosystem and the biodiversity. They also provide sometimes seedlings to the indigenous people to regenerate forests where logging activities takes places.

University Officials

University officials are researchers in the areas of forestry. These researchers provide innovative ideas in the context of forest utilization and management. Such innovative ideas might enhance the policymakers' ability in their decision-making processes. Research might also help indigenous people to better utilize forestlands. For example, the use of available inputs might improve indigenous crop productivity and minimize the forest depletion. Unlike the other stakeholders, university or research experts' actions do not directly affect forest utilization and management. Rather, their actions have an indirect effect through the generation of new ideas and the development of new technologies.

Interrelationships Among Stakeholders

The major focus of the research model is to describe the links of communication among the stakeholders. For instance, policymakers delimit the forestlands into "Perimetres" and grant concessions to the wood products manufacturers. They also require wood products manufacturers to encourage and provide seedling to the rural community to regenerate forests where logging operations are undertaken. This

enhances the close relationship between wood products manufacturers and the indigenous people. As a control mechanism, policymakers contact indigenous people to ensure the seedling's proper delivery and utilization.

Similarly, policymakers empower forest managers to perform the task of managing, protecting and regenerating the classified forestlands in Côte d'Ivoire. As rule of thumb, forest managers have the responsibility to inform the indigenous people about the portions of the land that have been classified. This is to avoid a potential conflict between policymakers and indigenous people. In addition, policymakers should encourage university officials to develop programs and research projects in the area of forest utilization and management. Such interaction among stakeholders would enhance sustainable forest resources and economic development in Côte d'Ivoire.

Hypotheses

Previous works revealed that a lack of high level of communication among stakeholder groups contributes to unsustainable forest utilization and management (Anderson 1988; FAO 1993; Repetto and Gills 1988). Where communication was effectively handled, sustainable forest utilization and management prevailed.

With regard to the hypotheses in this chapter, the terms "high"(>3.0) and "low" (<3.0) are defined as strong and poor communication, respectively, among stakeholder groups. The scale used was 1=very low to 5=very high. Following hypotheses were designed to measure the degree of interaction among stakeholder groups.

Communication Between Policymakers and University Officials

From policymakers viewpoint:

H1a: There is a high level of communication between policymakers and university officials.

From university officials viewpoint:

H1b: There is a high level of communication between university officials and policymakers.

Communication Between Policymakers and Indigenous People

From policymakers viewpoint:

H2a: There is a high level of communication between policymakers and indigenous people.

From indigenous people viewpoint:

H2b: There is a high level of communication between indigenous people and policymakers.

Communication Between Policymakers and Forest Managers

From policymakers viewpoint:

H3a: There is a low level of communication between policymakers and forest managers.

From forest managers viewpoint:

H3b: There is a low level of communication between forest managers and policymakers.

Communication Between Policymakers and Wood Products Manufacturers

From policymakers viewpoint:

H4a: There is a low level of communication between policymakers and wood products manufacturers.

From wood products manufacturers viewpoint:

H4b: There is a low level of communication between wood products manufacturers and policymakers.

Communication Between Forest Managers and Indigenous People

From forest managers view point:

H5a: There is a low level of communication between forest managers and indigenous people.

From indigenous people viewpoint:

H5b: There is a high level of communication between indigenous people and forest managers.

Communication Between Forest Managers and Wood Products Manufacturers

From forest managers viewpoint:

H6a: There is a low level of communication between forest managers and wood products manufacturers.

From wood products manufacturers viewpoint:

H6b: There is a low level of communication between wood products manufacturers and forest managers.

Communication Between Forest Managers and University Officials

From forest managers viewpoint:
H7a: There is a low level of communication between forest managers and university officials.

From university officials viewpoint:

H7b: There is a high level of communication between university officials and forest managers.

Communication Between Indigenous People and Wood Products Manufacturers

From indigenous people viewpoint:

H8a: There is a low level of communication between indigenous people and wood products manufacturers.
From wood products manufacturers viewpoint:

H8b: There is a low level of communication between wood products manufacturers and indigenous people.

Communication Between Indigenous People and University Officials

From indigenous people viewpoint:

H9a: There is a high level of communication between indigenous people and university officials.
From university officials viewpoint:

H9b: There is high level of communication between university officials and indigenous people.

Communication Between Wood Products Manufacturers and University Officials

From wood products manufacturers viewpoint:

H10a: There is a high level of communication between wood products manufacturers and university officials.
From university officials viewpoint:

H10b: There is a high level of communication between university officials and wood products manufacturers.

References

Anderson, Dennis. 1988. The Economics of Afforestation. A Case Study in Africa. Published for the World Bank. The Johns Hopkins University Press. Baltimore and London.

Donnelly, James; Gibson, James and Ivancevich, John. 1984. Fundamentals of Management. Business Publications, Inc., Plano, Texas.

Euske, N.A., and K.H. Roberts. 1987. Evolving Perspectives in Organization Theory: Communication Implications. In Handbook of Organizational Communication, eds. F. Jablin, L. Putnam, K. Roberts, and L. Porter, 41-69. Newbury Park, Calif.: Sage.

FAO. 1993. The Challenge of Sustainable Forest Management: What future for the world's forest? Rome: Publications Division, Food and Agriculture Organization of the United Nations (FAO).

Huber, G.P., and R. L. Draft. 1987. The Information Environments of Organizations. In Handbook of Organizational Communications, eds. F. Jablin, L. Putnam, K. Roberts, and L. Porter, 130-164. Newbury Park, Calif.: Sage.

Kreps, G.1990. Organizational Communication. White Plains, N.Y.: Longman.

Repetto, Robert and Malcolm Gillis (eds.). 1988. Public Policies and the Misuse of Forest Resources. Cambridge University press, Cambridge.

Shockley-Zalabak, P. 1994. Understanding Organizational Communication: Cases, Commentaries and Conversations. White Plains, N.Y.: Longman.

Shockley-Zalabak, P. 1991. Fundamentals of Organizational Communication: Knowledge, Sensitivity, Skills, Values. White Plains, N.Y.:Longman.

CHAPTER 4

METHODOLOGY

This chapter describes the research methodology used to conduct the research. It includes six sections. Following is the discussion of each section.

1. Research Design
2. Sample Frame
3. Survey Instrument Development
4. Measurement
5. Data collection
6. Data analysis

Research Design

This study was designed to better understand sustainable forest resources utilization and implications for economic development in Sub-Saharan Africa with particular reference to Côte d'Ivoire. This research was conducted using personal interviews. The interview questionnaire was both structured and open-ended to allow respondents to express thoughts and ideas not covered in fixed format questions. The interview questionnaire contained dichotomous, multichotomous, open-ended and scale questions.

Interview procedures included pre-notification letters (this was done two months before the field work starts), follow-up letters (four weeks before project was started), phone calls and visits to the interviewees' workplaces to specify the tentative date and time of interview. In some situations the interviews were obtained the day of the first visit. Upon completion of the study, a thank you note was sent to policymakers, forest managers, university officials and wood products manufacturers. A personal visit was made to thank community leaders.

Sample Frame

The sample for this study included the following groups: indigenous people, policymakers, university officials, forest managers and wood products manufacturers (Table 3). Fifteen cities were selected based on the following criteria: cities must have at least four wood products manufacturing firms, one office of policymakers and one office of forest managers. This procedure was used to facilitate the interview process.

Indigenous people were interviewed in villages of Gagnoa region. Gagnoa is located about 280 kilometers northwest of Abidjan, the largest city and economic capital of Côte d'Ivoire. This sub-region is a fraction of the " Haut Sassandra". In the past years, Gagnoa has experienced severe problems of deforestation and conversion of forestland into farming and agricultural activities. Since more than 60 languages are spoken in Côte d'Ivoire, Gagnoa was a perfect choice for the researcher because he could utilize his native language (Bete) to conduct the interviews. As a result, language and cultural barriers were minimized. Interaction with the indigenous people was direct and based on mutual trust when collecting the data. Many people from the northern regions and neighboring foreign countries, mainly from Burkina and Mali, had important settlements in the region and had acquired lands for the creation of coffee and cocoa plantations.

Most of the university participants were chosen from the "Institut Politechnique Houphouet-Boigny de Yamoussoukro" because it has a program of agronomy and small section of forestry. Twenty-five scholars in agronomy and forestry were contacted with 13 agreeing to be interviewed. It is important to say that there is one main university campus in Abidjan with few small branches in four other cities.

Table 3. Number of Respondents and Sample Size

Group	Number of People Contacted to be Interviewed	Number of People Interviewed
Indigenous People	25	24
University Officials	25	13
Forest Managers	25	25
Policymakers	25	21
Wood Products Manufacturers	25	20
Total	**125**	**103**

Survey Instrument Development

The personal interview was an efficient and the most effective method of obtaining information from a population, given its flexibility and degree of control exerted by the interviewer over the respondent and his/her environment (Ary et al. 1990). Sudman and Bradburn (1982) argued that if there were no threatening questions, and if the information to be requested refers to past phenomena or reactions, the personal interview method would present some advantages related to social interactions, encouragement, clarification and rate of response. de los Santos (1988) also observed that the personal interview was the most appropriate method for obtaining required data because of the high degree of illiteracy among indigenous people and not all indigenous people have mailing facilities.

A questionnaire was developed for each stakeholder group. Most of questionnaires were common across four stakeholder groups outside the indigenous people's group. Because of their level of education, indigenous people questionnaire was direct related to their environment and was somewhat different from the questionnaire of the other stakeholder groups. Following are the descriptions of the questionnaires for the stakeholder groups (see appendix A for complete questionnaires).

Indigenous People

The questionnaire designed for the indigenous people included 46 items divided into six sections:

1. general information (10 items)
2. forest utilization and regeneration practices (6 items)
3. landownership types, utilization and land security (10 items)
4. knowledge of forest management and regeneration (8 items)
5. forest policies (6 items)
6. environmental issues (6 items)

University Officials

The questionnaire developed for university researchers had 63 items divided into eight sections:

1. general information (6 items)
2. forest utilization and regeneration practices (7 items)
3. forest management (6 items)
4. forest policies and their communication (8 items)
5. forest industry development (6 items)
6. successful elements (3 items)
7. program deficiencies (3 items)
8. forest management issues (24 items)

Policymakers

The questionnaire for policymakers contained 50 items divided into 8 sections:

1. general information (6 items)

2. forest utilization and regeneration practices (13 items)
3. forest management (10 items)
4. forest policies and their communication (8 items)
5. forest industry development (6 items)
6. successful elements (3 items)
7. program deficiencies (3 items)
8. interrelationships among stakeholders (1 item)

Forest Managers

The questionnaire for forest managers included 63 items divided into eight sections:

1. general information (6 items)
2. forest utilization and regeneration practices (13 items)
3. forest management (6 items)
4. forest policies and their communication (8 items)
5. forest industry development (6 items)
6. successful elements (3 items)
7. program deficiencies (3 items)
8. forest management issues (18 items)

Wood Products Manufacturers

The questionnaire for wood products manufacturers contained 79 items divided into 10 sections:

1. general information (7 items)
2. forest utilization and regeneration practices (15 items)

3. forest management (6 items)
4. forest policies and their communication (8 items)
5. forest industry development (6 items)
6. successful elements (3 items)
7. program deficiencies (3 items)
8. forest management issues (17 items)
9. wood products production (9 items)
10. marketing information (5 items)

Measurement

In this study, the scales for measurement were both nominal and ordinal. Nominal scales were used when categorizing responses. A higher level of measurement, the ordinal scale ranks respondents according to different characteristics (Vlosky 1994). Kerlinger (1986) defined measurement as the process of assignment of numerals to objects or events according to rules. A Likert-type scale was also used in this study to measure the major independent and dependent variables or characteristics. These characteristics were statements to which the respondents were asked to indicate their level of agreement or disagreement using the following five-point scaling questions, anchored by 1= strongly disagree to 5= strongly agree and by 1= very unimportant to 5= very important.

In addition, the respondents were asked questions related to their demographics characteristics and the environment it affects them in their daily life. The comments, suggestions or concerns that were relevant to the study have been reported into the findings.

Data Collection

Data were collected by the researcher and trained student assistants in the period between June 30 to August 18, 1997.

Before conducting the interview, permission was obtained from officials of Minister of Agriculture and Natural Resources, village community leaders and directors of wood product manufacturers through personal visits between June 7 to June 29, 1997. The researcher explained the main objectives of the study to the government officials and village community leaders, while emphasizing that the study would benefit Côte d'Ivoire. Student assistants were selected according to their experience, personality, education and mostly language skills as well as a willingness to work. The interviewers attended a two-day training session which was held at the researcher's office. The agenda for the four-hour training session started with an explanation of the study, the main purpose and the objectives of the study and the benefits to Côte d'Ivoire. The instructions for each part of the questionnaire were carefully explained. The interviewers were given a brief explanation of the reason why they were conducting the interview and why they had to be trained before conducting the interview. The interviewers were told that they were only to collect information within the identified five groups. On the average, interviews lasted approximately 60 minutes and ranged from 50 to 80 minutes. Interviewers met every other weekend to discuss their experience or concerns regarding the interview process. In certain situations where assistance was needed, the researcher was contacted immediately by phone at the end of the day. The researcher also promised to share the results of the study with the

government officials, forest managers, local NGOs and university officials to encourage participation.

Data Analysis

The statistical analysis for this study included descriptive statistics, t-tests and one-way analysis of variance (ANOVA). Data obtained were coded and entered into the computer. Excel and Minitab, computer based statistical packages were used to manage and analyze the data through variable relationship testing (Ryan et al. 1985). Data entry was closely monitored to ensure accuracy. The statistical techniques used helped to discern differences in responses among the five stakeholder groups interviewed, analyze the data, and aid in reporting conclusions and recommendations.

References

Ary, D.; L.C. Jacobs; and A. Razavieh. 1990. Introduction to Research in Education. Forth Worth, TX: Holt, Rinehart, and Winston.

de los Santos, S. 1988. Use of Bennett's Hierarchical Model in the Evaluation of Extension Education Program for Cocoa Farmers in the Northeast Region of Dominican Republic. Unpublished Master's Thesis, the Ohio State University, Columbus, Ohio.

Kerlinger, F.N. 1986. Foundation's of Behavioral Research Second Edition. New York: Holt, Rinehart and Winston.

Ryan, Barbara F., Brian L. Joiner and Thomas A. Ryan, Jr. 1985. Minitab Handbook. Second Edition. PWS-Kent Publishing Co. Boston.

Sudman, S. and N.M. Bradburn. 1982. Asking Questions: A Practical Guide to Questionnaire Design. San Francisco, CA: Jossey-Bass.

Vlosky, P. Richard. 1994. "Influences of Interorganizational Information System Technologies on Business Relationship: Wood Products Sellers and Home Center Buyers. Unpublished Ph.D. Dissertation.

CHAPTER 5

RESULTS: PROFILE OF RESPONDENTS

Introduction

This chapter discusses the research results of each stakeholder group. The following are the four objectives common to all stakeholder groups:

1. To identify the demographic characteristics of each stakeholder group
2. To examine the perceptions of each stakeholder group related to its participation in forest management
3. To identify forest related interaction among stakeholder groups
4. To determine the awareness of issues related to forest utilization and management

The fifth objective which is to determine the perception of sustainable forest industry development is also common to all stakeholder groups except indigenous people. Unique objectives of each stakeholder group are found in the individual section. Terms common to certain sections in the chapter are also defined:

Role of Forests in Five Domains of Human Welfare: Definition of Terms

1. Forestland has protective services-means that forests protect water catchments, reduce flooding, and regulate streamflow. Trees are also used to stabilize sand dunes. Forests maintain biological diversity and climate regulation.
2. Forestland has educational services-forests can be used in science education, including research and teaching, to obtain and transmit basic knowledge. Forests enable the scientific investigation of natural processes.
3. Forestland has psychophysiological influences-forests penetrate deeply into psychological and spiritual realms, where connection between natural systems and

the human condition are broad, intricate, intangible and often mystical. Forests also provide aesthetic satisfaction, religious symbolism and practice.

4. Forestland can be used for consumption of plants, animals and derivatives-this is the domain best known in traditional forest practice, where management aims to produce tangible products for removal. Forestland is utilized for extraction of fuelwood, food, fiber and timber.
5. Forestland is a source of living-forests are converted into cropland, pastures, road, and residential and industrial sites in both industrialized and developing countries (Laarman and Sedjo 1992).

The Elements and Issues Related to Forest Utilization and Management: Definition of terms

1. Technical Assistance- skills needed by stakeholders to sustain and manage the forestlands. Technical assistance skill can be provided by forestry extension agents.
2. Financial assistance- the monetary incentive that can or should be provided by the government, international agencies, and non-governmental organizations to stakeholders in order to sustain and manage the forestlands.
3. Management Expertise- the managerial knowledge acquired through training and experiences in the field of forest utilization and management.
4. Environmental Awareness- knowledge acquired through observation and interaction to sustain the environment. Environmental awareness helps to prevent and to maintain the balance of the ecosystem.

Indigenous People

Côte d'Ivoire is generously endowed with human and natural resources which, more often than not, are either underutilized or overutilized. Côte d'Ivoire has more than 14.5 million citizens and has one of the highest population growth rates in the world (3.9 percent). Citizens are resourceful and resilient and constitute the country's greatest asset. About 70 percent of the population resides in rural communities where they engage in small-scale commodity crop production. Small-scale agriculture contributes significantly to local and national economies and helps to meet national development needs. Cocoa, coffee and tropical hardwoods are key products which account for 47 percent of the country's export earnings.

Gagnoa is located about 280 kilometers northwest of Abidjan, the largest city and economic capital of Côte d'Ivoire. This sub-region is a part of a larger region called the Haut Sassandra. Over the past years, Gagnoa has experienced severe problems of deforestation and conversion of forestland into farming and agricultural activities. Since more than 60 languages are spoken in Côte d'Ivoire, Gagnoa was chosen because the researcher could utilize his native language (Bete) to conduct the interviews. As a result, language and cultural barriers were minimized. Interaction with the indigenous people was direct and based on mutual trust when collecting the data. In addition to native people, some migrants from northern regions and neighboring countries, mainly Burkina Faso and Mali, have important settlements in the region and have acquired lands for the creation of coffee and cocoa plantations.

This section of the study reports the data analysis and findings of the indigenous people. The goal was to investigate the role and responsibility of the indigenous people in forest resources utilization and forest management practices.

OBJECTIVE 1: TO IDENTIFY THE DEMOGRAPHIC CHARACTERISTICS OF THE INDIGENOUS PEOPLE.

Tables and figures in this section display a summary profile of the demographic characteristics of the 24 indigenous people who took part in this study. These characteristics are age, gender, origin, family size (number of children), education, occupation, annual income and energy type used for cooking and lighting.

Age

As seen in Table 4, the mean age of the indigenous respondents was 41. Ten respondents (41.7 percent) in this study were between the ages of 41 and 50. Five (20.8 percent) were between 20 and 40 years old, while nine respondents (37.5 percent) were more than 50 years of age. It is also important to indicate that in this community the average maximum years that the indigenous people live is 46 years. The low life expectancy is mainly due to the fact that indigenous people have limited financial resources and therefore find it difficult to maintain their health as required.

Table 4. Age of the Indigenous People
(n=24 respondents)

Age	Number of Respondents	Percent
20-30	1	4.2
31-40	4	16.7
41-50	10	41.7
51-60	4	16.7
61+	5	20.8

note: mean 41.0 years

Gender

All indigenous respondents included in the study were males. The researcher could not interview females because women do not usually possess forestlands in the Gagnoa region.

Natural Origin of Indigenous People

The largest group of the indigenous respondents (83.3 percent or 20 respondents) was originally from the community, while 16.7 percent (4 respondents) of the people interviewed were newcomers. On average, most of the settlers migrated into the community in the middle of 1988 from the Northern Côte d'Ivoire and neighboring countries such as Burkina Faso and Mali.

Family Size (Number of Children)

This question was asked to get an idea about how fast the population was currently growing in Côte d'Ivoire and resulting consequences of population in respect of forest utilization years. The justification of this question is the same for all stakeholder groups. Family size is presented in Table 5. The data reveal that 58.3 percent of the indigenous respondents had between 0 and 4 children in their households while a third had between 5 and 9 children and the remaining 8.3 percent had more than 10 children. Although the idea of large family is still recognized, the new generation of indigenous people believe that it will be more manageable to have less children.

Table 5. Family Size of Indigenous People
(n=24 respondents)

Family Size	Number of Respondents	Percent
0-4	14	58.3
5-9	8	33.3
10+	2	8.3

Education

Information regarding the respondents' education level attained is shown in Table 6. The largest group of respondents (50 percent) had completed primary school. Slightly more than twenty nine percent had completed high school and the remaining 20.8 percent had no formal education.

Table 6. Education Received by Indigenous People
(n=24 respondents)

Education	Number of Respondents	Percent
No School	5	20.8
Primary	12	50.0
High School	7	29.2

Occupation

Twenty-three of the respondents were farmers with the remaining respondent being the manager of a rice processing company.

Annual Income

All indigenous people had an annual income of less than or equal to US $9,000. The average annual income of the indigenous respondents is less than US $1,000. Since Côte d'Ivoire has an average annual income of US $3,000, the earning power of the indigenous people is far below the national average (Ministere de l'Economie et de Finance, 1996).

Energy Type Used

This question was asked to find out about the proportion of respondents who frequently use fuelwood as main source of energy. This information aids in formulating sound and objective recommendations for forest utilization and

management policies in Côte d'Ivoire. All indigenous people said that the primary source of energy they used for cooking and lighting was fuelwood as fuelwood is probably the only source of energy available to the indigenous people.

OBJECTIVE 2: TO EXAMINE THE PERCEPTIONS OF THE INDIGENOUS PEOPLE RELATED TO THEIR PARTICIPATION IN FOREST MANAGEMENT.

Data presented in tables 7 and 8 report respondent perceptions toward forestland utilization. All respondents reported that they believed the forestland should be owned by the community. One hundred percent of the respondents also claimed the ownership of their land, but none said that they have land title. On the other hand, 18.2 percent of the indigenous respondents have sold some of the community's lands, while 81.8 percent (22 respondents) said they will never sell the community's lands.

Table 7. Indigenous People Perceptions of Land Tenure and Security
(n= 24 respondents)

Question	Yes	Percent	No	Percent
Is the land owned by the community?	24	100	0	0
Do you own your land?	24	100	0	0
Do you have your land title?	0	0	24	100
Did you sell land? (n= 22 respondents)	4	18.2	18	81.8

Table 8 displays the incomes earned from land sales. Only four indigenous people sold land. The income derived from land sales is a function of the number of hectares sold.

Table 8. Indigenous People Income Earned from Land Sales
(n= 4 respondents)

Total Income	Number of respondents	Hectares	$/Hectare
$320	1	2	160.0
$640	1	4	160.0
$1,280	1	9	142.2
$1,800	1	10	180.0

Plantations and Hectares Owned

All respondents claimed plantation ownership. Eleven respondents (45.8 percent) owned in average between 0.5 to 2.5 hectares and 13 respondents (54.2 percent) owned in average between 3 to 12 hectares of plantations (Table 9).

Table 9. Plantations and Hectares Owned by Indigenous People
(n= 24 respondents)

Hectares	Number of Respondents	Percent
0.5-2.5	11	45.8
3.0-12.0	13	54.2

Private Landownership

Data show that 91.7 percent of respondents claimed it was either "important" or "very important" to have private landownership. Slightly more than 4 percent of respondents believed that it was unimportant to have private landownership while the remaining had no opinion (Table 10).

Table 10. Indigenous People Perception of Private Landownership
(n= 24 respondents)

Responses	Number of Respondents	Percent
Unimportant	1	4.2
Important	1	4.2
Very Important	21	87.5
No opinion	1	4.2

Tree Planting and Forest Regeneration

None of the respondents grew trees for the purpose of forest regeneration. These respondents reported that they did not have the required financial assistance to plant trees. Most of them believed that it would take them many years before benefiting from such an investment.

Role of Forests in Five Domains of Human Welfare in the Community.

Respondent perceptions related to the role of forests in five domains of human welfare: forestland has protective services, forestland has educational services, forestland has psychophysiological influences, forestland can be used for consumption of plants, animals, and derivatives, and forestland is a source of living space (Table 11) were examined. A five point Likert scale was used with 1 = strongly disagree to 5 = strongly agree. The table also includes the standard deviation (SD) for each evaluated statement. Statements such as "forestland has protective services" and "forestland is a source of living space" each had a mean rating of 5.0. Respondents also had a strong belief that forestland can be used for consumption of plants, animals, and derivatives with a mean rating of 4.9. With a mean rating of 3.9 and 4.6, respectively, respondents also agreed about the psychophysiological influences of forestland, and that forestland had educational services.

Table 11. The Role of the Forests in Five Domains of Human Welfare
(n=24 respondents)
Scale: 1 = Strongly disagree to 5 = Strongly agree

Stated Items	Mean	Standard Deviation
Forestland has protective services	5.0	0.0
Forestland has educational services	4.6	0.8
Forestland has psychophysiological influences	3.9	1.5
Forestland can be used for consumption of plants, animals, and derivatives	4.9	0.2
Forestland is a source of living space	5.0	0.0

OBJECTIVE 3: TO IDENTIFY FOREST RELATED INTERACTION BETWEEN INDIGENOUS PEOPLE AND OTHER STAKEHOLDERS.

Information regarding the degree of interaction between indigenous respondents and other stakeholders is shown in Table 12. On average (weighted) respondents said that their current level of interaction with all other stakeholder groups (1.1 on a five point scale), was very low. On the other hand, respondents indicated a strong desire to interact with other stakeholders. The idea of communication will be further discussed in the tests of hypotheses section (Chapter 6) .

Table 12. Indigenous People Current and Desired Levels of Interaction with Other Stakeholders
(n= 24 respondents).
Scale: 1 = very low to 5 = very high

Indigenous people communication with:

Policymakers	(n= 21 respondents)
Current Level	Desired Level
1.1	5.0
Forest Managers	(n= 25 respondents)
Current Level	Desired Level
1.1	4.8
Wood Products Mfgs.	(n= 20 respondents)
Current Level	Desired Level
1.2	4.8
University Officials	(n= 13 respondents)
Current Level	Desired Level
1.0	5.0
Weighted Average	**Weighted Average**
Current Level	Desired Level
1.1	4.9

OBJECTIVE 4: TO DETERMINE THE AWARENESS OF ISSUES RELATED TO FOREST UTILIZATION AND MANAGEMENT

The Elements and Issues Related to Forest Utilization and Management

Figure 10 shows respondents perceptions related to forest utilization and regeneration practices. This question is related to what should be a part of forest utilization and management in Côte d'Ivoire. Respondents felt that technical assistance from forestry officials is important with a mean rating of 4.8 out of 5.0. Respondents also valued the importance of financial assistance (government subsidies) with a mean rating of 4.5. Environmental awareness was ranked next in importance with a mean rating of 4.4 and the least important was the need for management expertise with a mean rating of 4.1, still high on a five point scale.

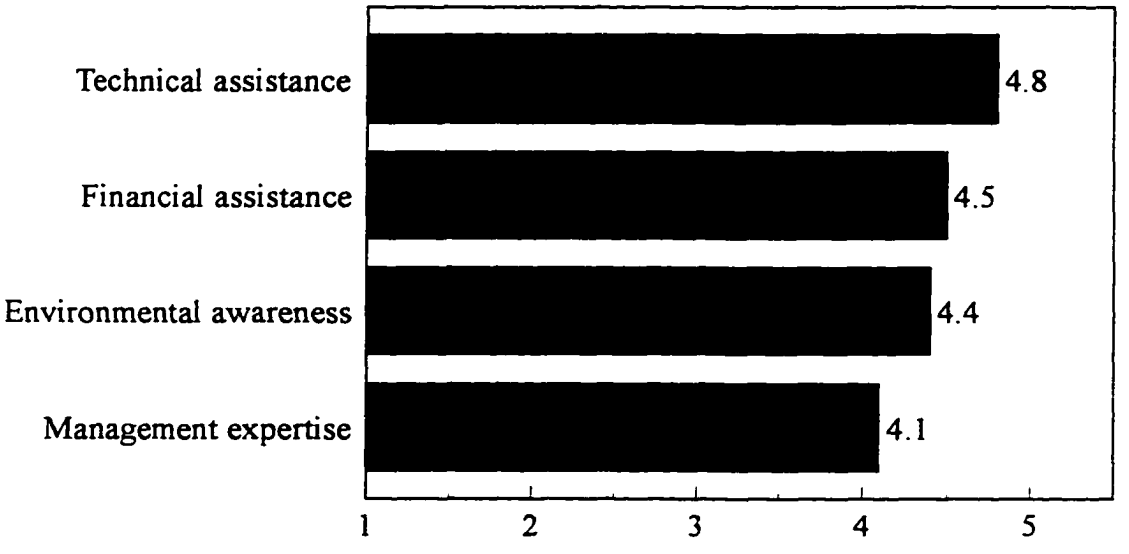


Figure 10. Indigenous People Perceptions of Elements of Forest Utilization and Management Scale: 1=strongly disagree to 5= strongly agree (n=24 respondents)

Time Required to Regenerate Forests

A question was asked to evaluate the degree of knowledge of the respondents regarding time required to regenerate forests. This question referred to both industrial forest plantations and natural forests. Regenerated forests are referred to forests that have reached their maturity. Fast growing species of industrial forest plantations mature at 24 years, while natural forests reach their level of maturity between 50 to 100 years. The rationale of this question is to find out if the respondents are knowledgeable enough about the time required for forests to fully regenerate in order to better make forest utilization decisions. Two-thirds of respondents believe that it takes more than 24 years for a deforested area to regenerate. More than 12 percent (12.5 percent) of respondents believe that forests can be regenerated between 18 to 23 years. The remaining 20.8 percent thought forest can be regenerated in less than 18 years (Figure 11). The results of this question show that the indigenous people were aware that depleted forests take longer periods to regenerate. Despite their knowledge, the indigenous people are one of the more significant agents of forests destruction. Accordingly, the needs of the indigenous people should reflect these needs.

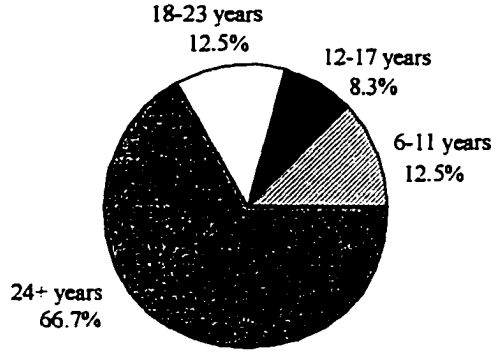


Figure 11. Indigenous People Perceptions of Time Required to Regenerate Forests (n=24 respondents)

Methods of Forest Regeneration

Respondents were asked to identify the best method of forest regeneration to determine their degree of knowledge about this issue. Ninety-two percent of respondents believed that both fallow and tree planting methods were the best methods for forest regeneration (Figure 12). The majority of the indigenous people had prior knowledge of these methods and believed them to be the least expensive way of regenerating forests. The remaining 8 percent indicated that direct seedling was the best method.

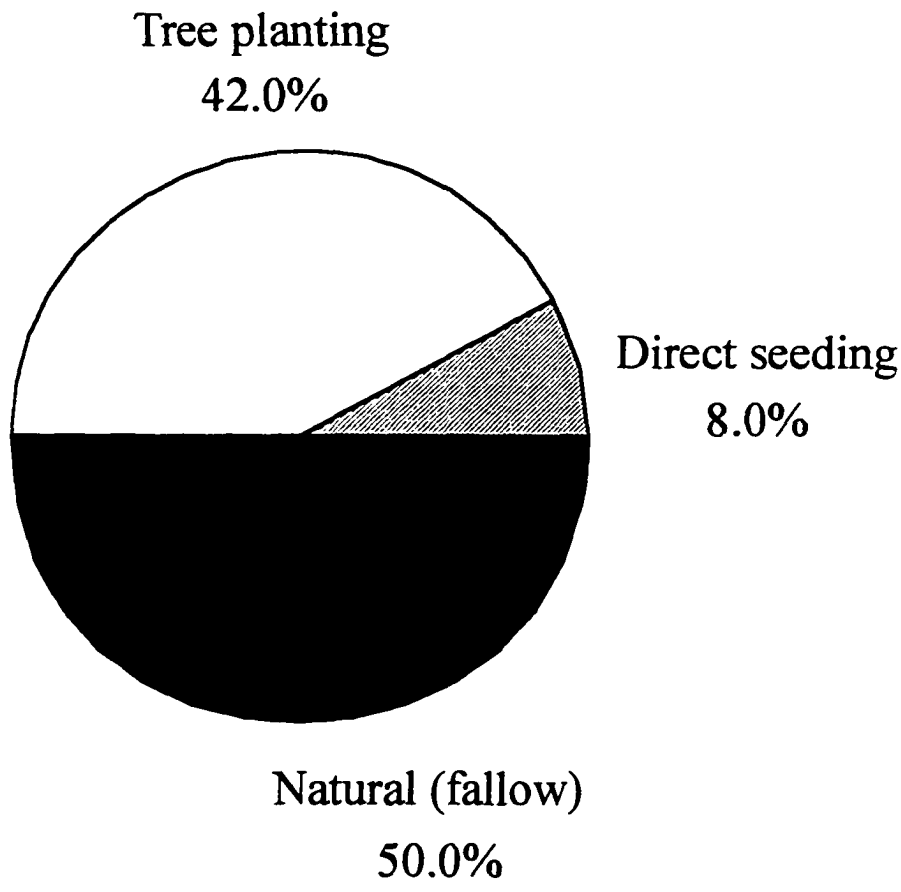


Figure 12. Indigenous People Perceptions of Best Method of Forest Regeneration (n=24 respondents)

Awareness of Government Forestry Programs

This question was asked to discern if respondents were informed about government forest regeneration, management, and protection programs. A majority of respondents (62.5 percent) indicated that they were not aware of government programs; while 37.5 percent of the respondents reported that they were aware about such programs. For more information about the forest programs refer to the stakeholders combined responses section.

Government Policies Communication

A question was asked to find out if respondents were informed about new forest policies and if informed how often policies were communicated. Slightly more than eighty three percent of respondents were not informed at all about government forest policies, while only 16.7 percent of respondents said they were informed in the past two years.

Forestry Extension

The purpose of this question was to evaluate if respondents were assisted by policymakers to discuss issues related to forest utilization and management. Figure 13 shows that 83.3 percent of respondents have not received assistance from policymakers (forestry extension agents). Three respondents (12.5 percent) indicated that they seldom received assistance, and the remaining 4.2 percent said they did receive assistance at least every two years. Assistance includes workshops organized by policymakers for indigenous people to develop skills and expertise in the areas of forest utilization and management practices.

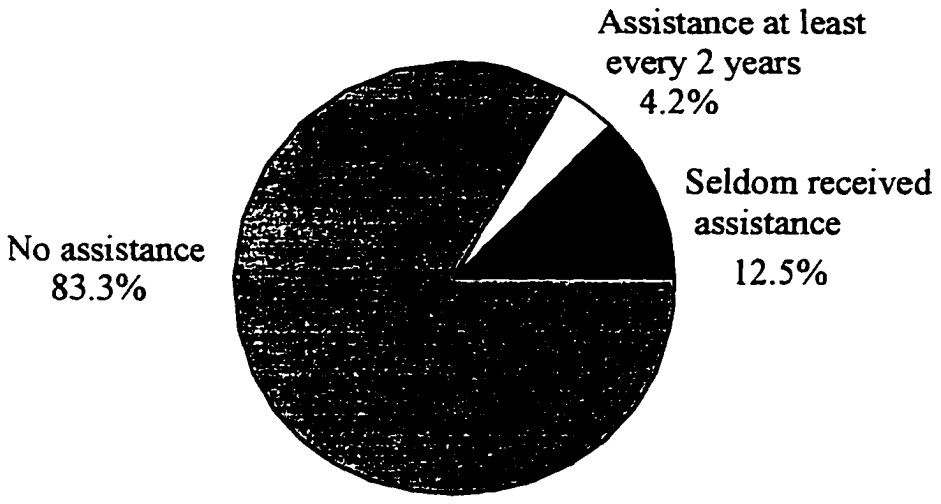


Figure 13. Indigenous People Perceptions of Forestry Extension (n=24 respondents)

Land Sales

A question was asked to find out about whether respondents were aware of laws and regulations related to land sales. Ninety-six percent of respondents do not believe that government policies prevent land sales while only 4 percent said that they believe these programs to exist. This is in light of the fact that there is no law that prevents land sales in Cote d'Ivoire. On the other hand, landownership is communal in rural communities. As a result, indigenous people who do not have adequate financial resources tend to consider forestland as a commodity to trade.

Forest Policy Decision-Making

A question was formulated to obtain the opinions of the respondents about whether they were involved in forest policy decision-making processes. All indigenous people surveyed affirmed that they have never been involved in forest policy decision-making processes. Specifically, indigenous people are not included in decisions related to the classification of their forestlands by policymakers. Rather, they are just told

about the decisions that have already been made. In addition, when policymakers allocate forestlands to be harvested by wood products manufacturers, policymakers do not associate indigenous people in this decision. It is only when wood products manufacturers encounter some resistance from indigenous people that wood products manufacturers tend to inform them about their harvesting operations.

University Officials

University institutions are well known worldwide for their creative and innovative ideas in forest utilization and management practices. Thus, university officials play an important role in the social and economic development to improve human welfare in the context of the forest resources.

The University education system in Côte d'Ivoire is divided into two major components: "Universite" and "Institut" described below:

Universite de Côte d'Ivoire (University of Côte d'Ivoire). Universite de Côte d'Ivoire has an average enrollment of 38,000 students and represents the main university campus. Universite de Côte d'Ivoire is located in Abidjan. In addition, there are four branches of the Universite de Côte d'Ivoire: Universite d'Abobo-Adjame (University of Abobo-Adjame) has an average enrollment of 2,500 students and is located in Abidjan; Universite Regionale de Bouake (Regional University of Bouake) located in Bouake has an average enrollment of 3,500 students; Universite Regionale de Korhogo (Regional University of Korhogo) located in Korhogo in northern part of Côte d'Ivoire has an average enrollment of 300 students; and Universite Regionale de Daloa (Regional University of Daloa) located in Daloa in midwest part of the country has an average enrollment of 300 students.

Institut. The institut is made of three Grandes Ecoles (School of Higher Education): Institut National Superieur d'Enseignement Technique (National Institute of Technology), Ecole Superieure Agronomique (School of Agronomy) and Ecole Nationale Superieure des Travaux Publics (School of Civil Engineering).

The university system in Côte d'Ivoire does not have natural resources programs (including forestry), therefore most of the data were collected by the researcher at School of Agronomy where forestry and related issues are discussed as part of their curriculum by university officials.

OBJECTIVE 1: TO IDENTIFY THE DEMOGRAPHIC CHARACTERISTICS OF UNIVERSITY OFFICIALS

Age

Information regarding the demographic characteristics of university respondents is presented in Table 13. Out of 13 university respondents, nine (69.2 percent) were between the ages of 41 and 50. This group was both largest and oldest among the respondents.

Table 13. Age of University Officials
(n= 13 respondents)

Age	Number of Respondents	Percent
20-30	1	7.7
31-40	3	23.1
41-50	9	69.2

Gender

Among the university respondents ten were males and three were females.

Family Size (Number of Children)

Information regarding number of children reveals that 76.9 percent of university respondents had between 0 and 4 children. The remaining three respondents or 23.1 percent had between 5 and 9 children (Table 14).

Table 14. Family Size of University Officials
(n= 13 respondents)

Family Size	Number of Respondents	Percent
0-4	10	76.9
5-9	3	23.1

Education

Data show that 12 respondents or 92.3 percent had at least one graduate degree. One respondent (7.7 percent) had only an undergraduate degree (Table 15).

Table 15. Education Received by University Officials
(n= 13 respondents)

Education	Number of Respondents	Percent
Undergraduate	1	7.7
Graduate	12	92.3

Occupation

Data shown in Table 16 display summary information of university respondent occupations. Twelve, or 92.3 percent of university respondents were either professors or instructors. The remaining one respondent, a registrar, was interviewed because the respondent was a university administrator and was familiar with forestry issues in Côte d'Ivoire. Since university of Côte d'Ivoire does not have a school of forestry, professors and administrators interviewed were officials dealing occasionally with natural resource issues in Côte d'Ivoire.

Table 16. Occupation by University Officials
(n= 13 respondents)

Occupation	Number of Respondents	Percent
Professor	9	69.2
Instructor	3	23.1
Registrar	1	7.7

Annual Income

The annual salary of university respondents was unevenly distributed. Seven respondents (53.9 percent) earned between US $9,001 and US $18,000 per year. Five respondents or 38.5 percent had an annual salary less or equal US $9,000 (Table 17). Only one respondent (7.7 percent) was making above US $18,000. University officials had an average annual income of US $10,518 significantly above the national average of US $3,000. Compared to the other stakeholder groups, university officials' average annual income was the second highest, ranked behind wood products manufacturers (US $29,825).

Table 17. Annual Income by University Officials
(n= 13 respondents)

Annual Income	Number of Respondents	Percent
0-$9,000	5	38.5
$9,001-$18,000	7	53.9
$18,001-$28,000	1	7.7

Energy Type Used

Data related to energy type used indicate that 92.3 percent of respondents were using natural gas for cooking and only one respondent (7.7 percent) was using electricity for cooking and lighting (Table 18). A majority of university officials were using natural gas because they were living in large cities where natural gas was

available to them. Their average annual income being $10,518, university officials had relatively one of the highest income among the stakeholder groups. As a result, they could afford natural gas for cooking and lighting.

Table 18. Energy Type Used by University Officials
(n= 13 respondents)

Energy Type Used	Number of Respondents	Percent
Fuelwood	0	0
Charcoal	0	0
Gas	12	92.3
Electricity	1	7.7

OBJECTIVE 2: TO EXAMINE THE RELATIONSHIP BETWEEN UNIVERSITY OFFICIALS WITH REGARD TO THEIR PARTICIPATION IN FOREST RESOURCES UTILIZATION AND MANAGEMENT

Land Tenure and Security

Data in Table 19 indicate respondent perceptions of land tenure in Côte d'Ivoire. Nine respondents (69.2 percent) believe that forestland was owned by the community, while 30.8 percent of the respondents claimed that forestland was not owned by the community (Table 19).

Table 19. University Officials Perceptions of Land Tenure and Security
(n= 13 respondents)

Question	Yes	Percent	No	Percent
Is the land owned by the community?	9	69.2	4	30.8

Private Landownership

A question was asked to get the opinions of respondents about landownership. Data show that 92.3 percent of respondents believe it was either "important" or "very important" to have private landownership, while one respondent, or 7.7 percent, indicated that private landownership was unimportant (Table 20).

Table 20. University Officials Perceptions of Private Landownership
(n= 13 respondents)

Statement	Number of Respondents	Percent
Unimportant	1	7.7
Important	4	30.8
Very Important	8	61.5

Role of Forests in Five Domains of Human Welfare in the Community

Information regarding the respondents' perceptions of the role of forests in five domains of human welfare is reported in Table 21. The data indicate the respondents attitudes, which were reported using a 5-point Likert Scale indicating varying degree of agreement (1= strongly disagree to 5= strongly agree), as it relates to five domains of human welfare. Results show that all of the statements received high ratings above 4.0. Forestland utility as living space had the highest mean rating of 4.7.

Table 21. University Officials Means and Standard Deviations of Items Related to the Role of Forests in Five Domains of Human Welfare
(n=13 respondents)
Scale: 1= strongly disagree to 5= strongly agree

Statement	Mean	Standard Deviation
Forestland has protective services	4.6	0.7
Forestland has educational services	4.2	1.2
Forestland has psychophysiological influences	4.2	0.8
Forestland can be used for consumption of plants, animals, and derivatives	4.5	1.2
Forestland is a source of living space	4.7	0.6

OBJECTIVE 3: TO DETERMINE UNIVERSITY OFFICIAL PERCEPTIONS OF SUSTAINABLE FOREST INDUSTRY DEVELOPMENT PRACTICES

Forest Industry Development

Data presented in Figure 14 discuss respondent attitudes as it is related to forest industry development. The scale used was 1= very unimportant to 5= very important.

The statements increase employment in the industry and promote entrepreneurship had relatively high mean ratings of 4.6 and 4.5, respectively. Most of the other statements were also highly rated except attracting new primary industry and increase market share of Côte d'Ivoire forest products in world market, which had relatively low mean ratings of 3.1 and 3.8, respectively.

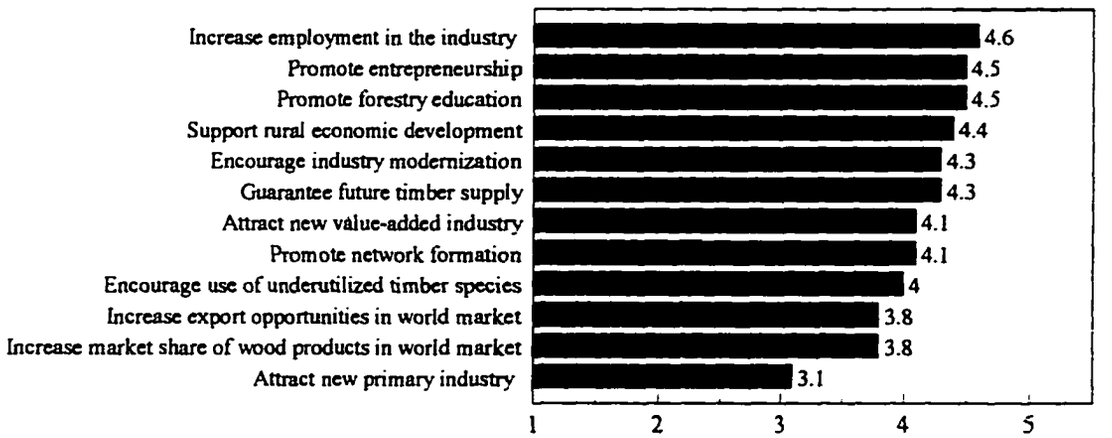


Figure 14. University Officials
Importance of Elements of Forest Industry Development
Scale: 1=very unimportant to 5=very important
(n=13 respondents)

Forest Industry Promotion

A question related to forest industry promotion was asked. Seven respondents (58.3 percent) said that the development of the existing secondary forest products industry should be encouraged. Secondary forest products industry is defined as value-added products industry: woods are processed before they can be sold at better prices on the markets. Slightly more than 58 pecent of respondents reported that encouraging existing secondary forest products was important. Two respondents (16.7 percent) indicated that the existing primary forest industry (primary industry is related to logging and log marketing activities) should be promoted. Two respondents (16.67

percent) reported that attracting new primary forest industry should be promoted. Only one university respondent (8.3 percent) indicated that attracting new secondary forest industry should be encouraged (Figure 15).

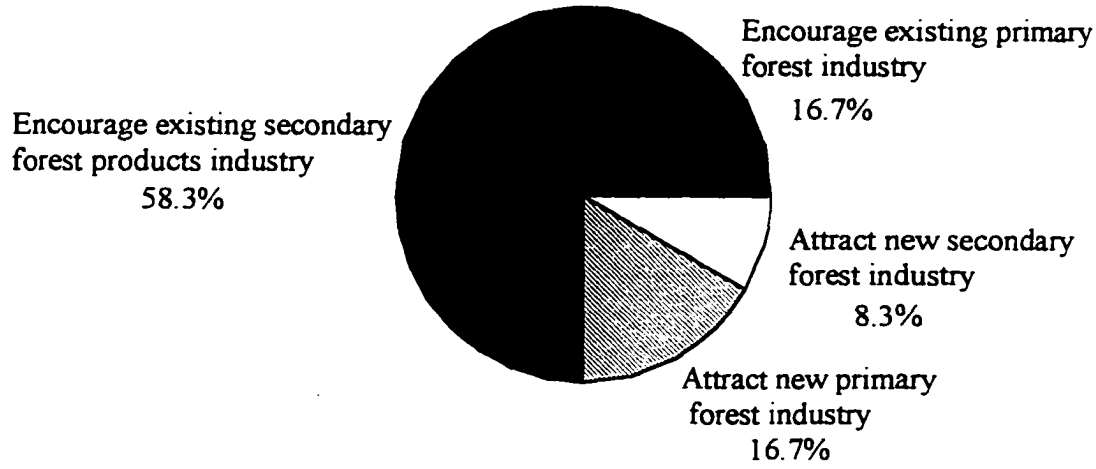


Figure 15. University Officials Perceptions of Forest Industry Promotion (n=13 respondents)

Methods to Promote New Markets

The purpose of this question was to get the viewpoints of the respondents about the methods used to promote new Côte d'Ivoire wood markets. Data show that seven respondents (54.5 percent) indicated that advertising at trade shows was an excellent method to promote new markets for forest products industry in Côte d'Ivoire. The second most important method to promote new markets was the method of distributing products information according to university officials. Additionally methods such as exploring foreign markets for Côte d'Ivoire's forest products, publishing industry directories, and reporting market prices were identified as less valued methods to promote new markets for forest products. As seen in Figure 16, the information of individual method is given.

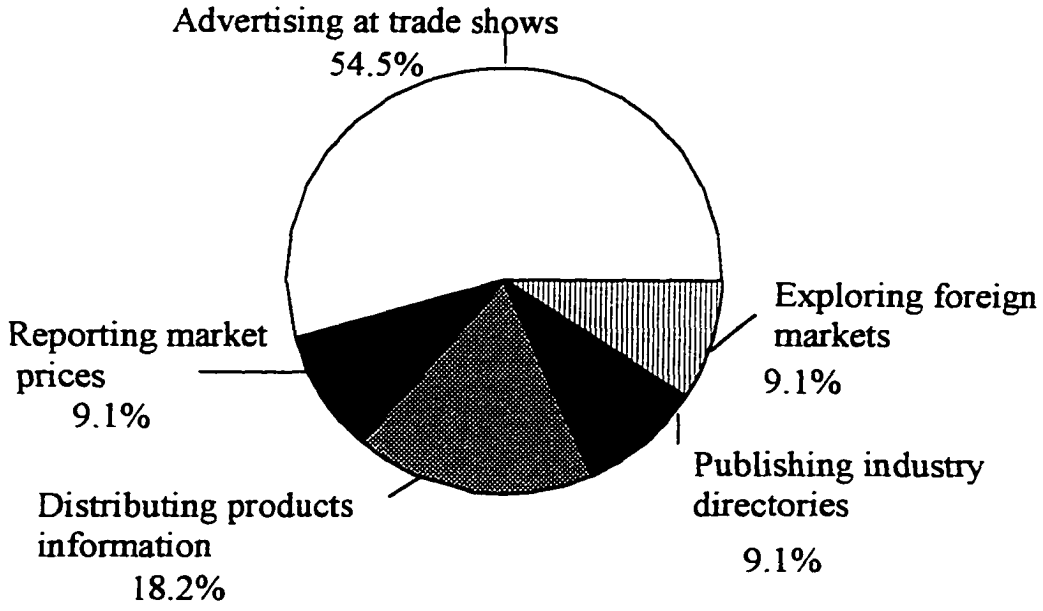


Figure 16. University Officials Perceptions of Promotional Methods of New Forest Products Markets (n=13 respondents)

OBJECTIVE 4: TO DETERMINE THE DEGREE OF INTERACTION BETWEEN UNIVERSITY OFFICIALS AND THE OTHER STAKEHOLDERS

Degree of Interaction Between University Officials and the Other Stakeholders

The data in Table 22 reveal that respondent degree of interaction with other stakeholder groups was low (weighted average rating of 1.5). With a desired level weighted average rating of 4.3, respondents indicated a high desire to interact with other stakeholders. Results show that there were wide gaps between current and desired levels of communication as it is related to university officials and the other stakeholder groups. In the study results demonstrated that university officials had also played a lesser role in communicating with the other stakeholder groups in Côte d'Ivoire. Thus, the participation in sustainable forest utilization and management has been limited. A full discussion on perception gaps of communication among stakeholder groups can be found in Chapter 6.

Table 22. **University Officials Perceptions of Current and Desired Level of Interaction with the Other Stakeholders**
(n= 13 respondents)
Scale: 1= very low to 5= very high

University communication with:

Policymakers	(n= 21)
Current Level	Desired Level
1.3	4.6
Forest Managers	(n= 25)
Current Level	Desired Level
1.6	4.3
Wood Products Mfgs.	(n= 20)
Current Level	Desired Level
1.2	3.9
Indigenous People	(n= 24)
Current Level	Desired Level
1.7	4.2
Weighted Average	**Weighted Average**
Current Level	Desired Level
1.5	4.3

OBJECTIVE 5: TO DETERMINE UNIVERSITY OFFICIAL ATTITUDES RELATED TO FOREST UTILIZATION AND MANAGEMENT.

Issues related to forest utilization and management are as follows: forest utilization and management, forest regeneration, forest programs development and forest policy decision-making processes.

The Elements and Issues Related to Forest Utilization and Management

Figure 17 shows respondents attitudes related to elements that should be included in forest utilization and management practices. Respondents indicated that the environmental awareness was a very important factor (mean rating was 5.0) in the

process of forest utilization and management. Respondents evaluated the other elements (financial assistance, technical assistance and management expertise) as being important to help manage the natural forests.

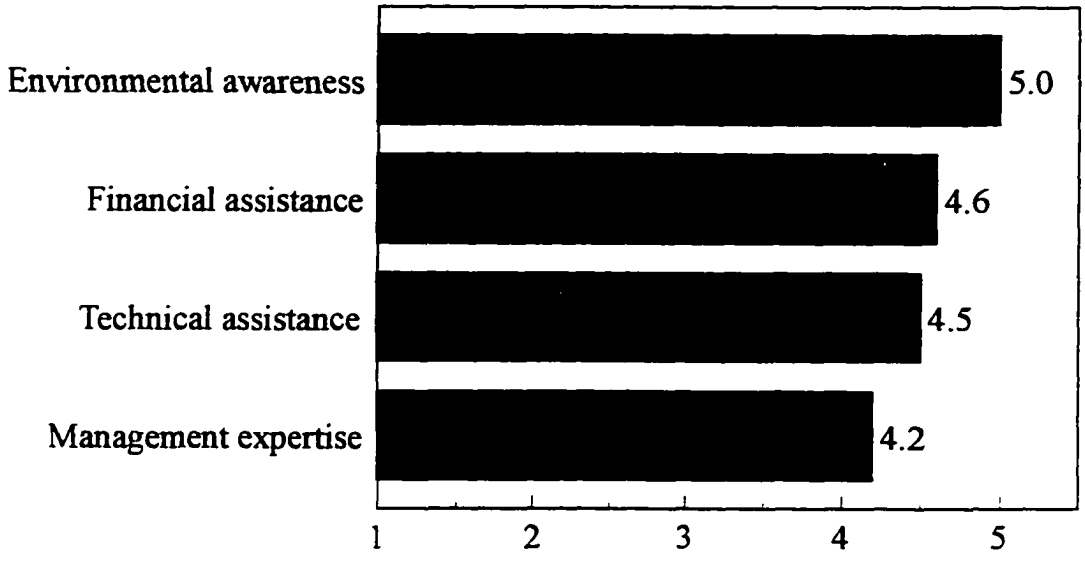


Figure 17. University Officials Perceptions of Elements of Forest Utilization and Management Scale: 1=very unimportant to 5=very important (n=13 respondents)

Time Required to Regenerate Forests

This question was asked to evaluate the degree of knowledge of respondents regarding forest regeneration. Seventy-five percent of respondents believe that it takes more than 24 years for a depleted forest to gain its ecological balance. Seventeen percent of the respondents believe that forests can be regenerated between 18 and 23 years. The remaining 8 percent believed that forests can be reforested in less than 18 years. Again this tells us that most respondents believe that once the forest is depleted, it takes longer period to completely regenerate. The key idea here was to test the

respondents knowledge of forest regeneration (Figure 18). Details relevant to this question have already been discussed in the section relating to the indigenous people.

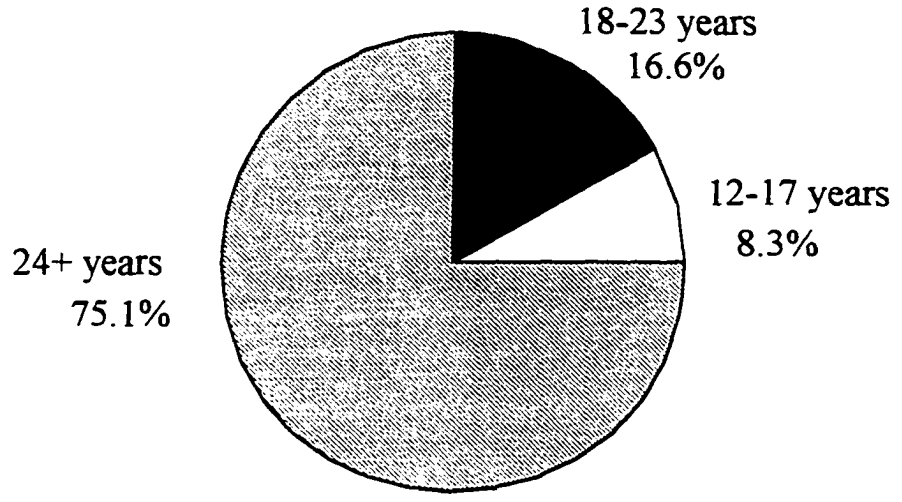


Figure 18. University Officials Perceptions of Time Required to Regenerate Forests (n=13 respondents)

Forest Development Programs

This question was asked to identify the respondent perceptions of the most important elements of the forest development programs in Côte d'Ivoire (Figure 19). Respondents felt that International Development Agency Cooperation was the most important element with a mean rating of 5.0, meaning that respondents had high level of confidence in International Development Agencies for the forest development programs in Côte d'Ivoire. Strong government leadership was the least important factor with a mean rating of 2.9, meaning that respondents had less trust in government leadership. The international development agencies were highly ranked by respondents because of their importance in giving grants and providing some technical assistance to host country for its forest development programs. Criteria such as forest resource

considerations, global forest products demand and adequate funding were also ranked important by respondents.

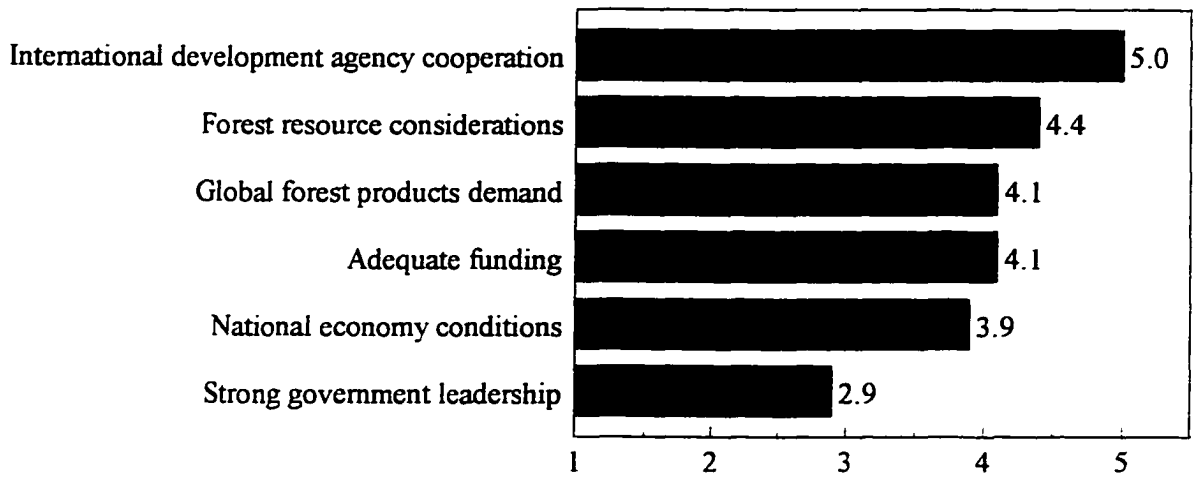


Figure 19. University Officials Perceptions of Forest Development Programs Scale: 1=very unimportant to 5=very important (n=13 respondents)

Forest Policy Decision-Making

The purpose of this question was to obtain the viewpoints of the respondents about whether they were involved in forest policy decision-making processes. Ninety-two percent of respondents have never been informed by the government about forest policy decision-making processes. Slightly more than 8 percent reported that they were apprised occasionally about forest policy decision-making.

Forest Managers

The society of forest plantations (SODEFOR) created in 1966 is the primary government forest development agency in Côte d'Ivoire. SODEFOR's mission is to plant forests and manage forest management activities (NTDB 1996). Before the establishment of SODEFOR, the stock of total forest planted was 10,000 hectares.

Between 1966 and 1993, SODEFOR's stock of forest plantations increased from 10,000 hectares to 83,000 hectares. In February 1992, the "Permanent Domain" also called the classified defense forests was brought under the sole management of SODEFOR (NTDB 1996). In that year plantation forests managed by SODEFOR accounted for only 20 percent of mixed stands with teak (Tectona grandis) being major species planted. The main objective of SODEFOR is to have a permanent forest zone maintained at 20 percent of total forest area by the year 2015. If the objectives of SODEFOR are met, the forest ecological equilibrium of the country is projected to be maintained at a sustained production of 4 million cubic meters of timber annually (NTDB 1996).

The researcher visited 15 cities to collect information from forest managers (forest managers have offices in the major cities in southern forested parts in Côte d'Ivoire to better serve the forest utilization and management practices). A total of 25 forest managers participated in the study.

OBJECTIVE 1: TO IDENTIFY THE DEMOGRAPHIC CHARACTERISTICS OF FOREST MANAGERS.

Age

Information regarding age is reported in Table 23. Seventeen respondents (68.0 percent) were between 20 and 40 years of age while eight respondents (32.0 percent) were more than 41 of years of age.

Table 23. Age of Forest Managers
(n= 25 respondents)

Age	Number of Respondents	Percent
20-30	4	16.0
31-40	13	52.0
41-50	6	24.0
51-60	2	8.0

Gender

Table 24 shows that 20 respondents (80 percent) in this section of the study, were males. Five respondents (20 percent) were females. This could have be a sign of changing roles of women in recent years in Côte d'Ivoire.

Table 24. Gender of Forest Managers
(n= 25 respondents)

Gender	Number of Respondents	Percent
Male	20	80.0
Female	5	20.0

Family Size (Number of Children)

Information regarding respondents number of children indicated that sixteen respondents (64.0 percent) had between 0 and 4 children. Eight respondents (32.0 percent) had between 5 and 9 children and only one respondent (4.0 percent) had more than 10 children (Table 25).

Table 25. Family Size of Forest Managers
(n=25 respondents)

Family Size	Number of Respondents	Percent
0-4	16	64.0
5-9	8	32.0
10+	1	4.0

Education

Data in Table 26 show that one respondent (4.2 percent) had only a primary education; nineteen respondents (79.2 percent) had a high school education; three respondents (12.5 percent) had an undergraduate education and one respondent (4.2 percent) had a graduate degree.

Table 26. Education Received by Forest Managers
(n=24 respondents)

Education	Number of Respondents	Percent
Primary	1	4.2
High School	19	79.2
Undergraduate	3	12.5
Graduate	1	4.2

Occupation

The occupations of the forest manager respondents are presented in Table 27. The data reveal that thirteen respondents (52.0 percent) were forestry extension agents, which was the largest professional group interviewed among forest managers. Six respondents (24.0 percent) were program managers. The remaining six respondents (24.0 percent) were support staff.

Tables 27. Occupation by Forest Managers
(n=25 respondents)

Occupation	Number of Respondents	Percent
Manager	6	24.0
Agent	13	52.0
Support Staff	6	24.0

Annual Income

The annual income of respondents are illustrated in Table 28. The data reveal that twenty one respondents (87.5 percent) had an annual income less than US $9,000 and three respondents (12.5 percent) had an annual income between US $9,001 and US $18,000. In addition, three respondents had an annual income much greater than the national average (US $3,000). The average annual income of forest managers was US $4,986 and was US $1,986 above the national average. Forest managers had the third

lowest earning power (behind indigenous people and policymakers) among the stakeholders.

Table 28. Forest Managers' Annual Income (US $)
(n= 25 respondents)

Income	Number of Respondents	Percent
0-$9,000	21	87.5
$9,001-$18,000	3	12.5

Energy Type Used

Six respondents (24 percent) reported fuelwood as their main source of energy. Eleven respondents (44 percent) indicated that they used charcoal for cooking and lighting and eight respondents (32 percent) revealed that natural gas was their main source of energy (Table 29).

Table 29. Energy Type Used by Forest Managers
(n=25 respondents)

Energy Type Used	Number of Respondents	Percent
Fuelwood	6	24.0
Charcoal	11	44.0
Gas	8	32.0

OBJECTIVE 2: TO EXAMINE THE PERCEPTION OF FOREST MANAGERS RELATED TO THEIR PARTICIPATION IN FOREST RESOURCES UTILIZATION AND MANAGEMENT.

Land Tenure and Security

Responses regarding land tenure and security is presented in Table 30. Twenty respondents (83.3 percent) believe that forestland is owned by the community and four respondents (16.7 percent) believe that this is not the case. Twelve respondents (50 percent) reported that their land belonged to them and twelve respondents (50 percent)

indicated that they did not own the land. Twelve respondents (80 percent) reported that they did not have land titles. Three respondents (20 percent) indicated they have their land titles.

Table 30. Forest Managers Perceptions of Land Tenure and Security
(n= 25 respondent)

Question	Yes	Percent	No	Percent
Is the land owned by the community (n=24)?	20	83.3	4	16.7
Do you own your land? (n=24)	12	50.0	12	50.0
Do you have your land title? (n=15)	3	20.0	12	80.0

Plantations and Hectares Owned

Tables 31 & 32 display the summary information regarding plantations and hectares owned by the respondents who took part in this section of the study. Seven respondents (29.2 percent) indicated they had plantations. Seventeen respondents (70.8 percent) reported that they did not have any plantations. Respondents indicated that they owned plantations of an average of 2 hectares, 3 hectares, 10 hectares, 15 hectares and 25 hectares. Perennial crop plantations are created to commercialize the cocoa and coffee beans to earn income.

Table 31. Plantations Ownership by Forest Managers
(n=24 respondents)

Question	Yes	Percent	No	Percent
Do you have a plantation?	7	29.2	17	70.8

Table 32. Hectares Owned by Forest Managers
(n= 5 respondents)

Average Hectares Owned	Number of Respondents	Percent
2	1	20
3	1	20
10	1	20
15	1	20
25	1	20

Land Sales

All respondents indicated that they had never sold land.

Private Landownership

Private landownership for the forest manager respondents are reported in Table 33. Twenty-four respondents (96 percent) said that it was either "important" or "very important" to have private landownership. Only one respondent (4 percent) indicated that having private landownership was unimportant.

Table 33. Perceptions of Forest Managers on Private Landownership
(n= 25 respondent)

Statement	Number of Respondents	Percent
Unimportant	1	4.0
Important	9	36.0
Very Important	15	60.0

Role of Forests in Five Domains of Human Welfare in the Community

Table 34 shows respondent attitudes related to the role of the forest in five domains of human welfare. The scale used was 1= strongly disagree to 5= strongly agree. The table also includes the standard deviation (SD) for the evaluated statements. The data show that all of the statements were relatively highly rated with means above 4.0. The statements forestland has protective services and forestland can be used for consumption of plants, animals, and derivatives had the highest mean ratings of 4.9 and 4.9, respectively, meaning that respondents were aware of the importance that forestland plays in human welfare on day-to- day basis. Not only the forestland has protective services but it also plays an important role of supplying oxygen and absorbing carbonate dioxide.

Table 34. Forest Managers Means and Standard Deviations of Items Related to the Role of Forests in Five Domains of Human Welfare
(n=25 respondents)

Statement	Mean	Standard Deviation
Forestland has protective services.	4.9	0.2
Forestland has educational services.	4.4	1.2
Forestland has psychophysiological influences.	4.2	1.4
Forestland can be used for consumption of plants, animals and derivatives.	4.9	0.3
Forestland is a source of living space.	4.8	0.8

OBJECTIVE 3: TO DETERMINE FOREST MANAGERS PERCEPTIONS OF SUSTAINABLE FOREST INDUSTRY DEVELOPMENT

Forest Industry Development

Data in Figure 20 report respondent attitudes related to the importance of elements of forest industry development in Côte d'Ivoire. The scale used was 1= very unimportant to 5= very important. Variables such as "guarantee future timber supply; promote forestry education, technology transfer and technical assistance; and promote network formation" were highly ranked variables each with a mean rating of 4.8, meaning that these elements were crital to a sustainable forest resources utilization and management in Côte d'Ivoire from the viewpoint of the respondents. The variable "Increase export opportunities of wood products in world markets" had the lowest ranking with a mean rating of 2.2. The variables which were ranked high in the order of importance reflect the current concerns regarding the state of forests in Côte d'Ivoire. Forest managers believe that it is important that these elements be managed better in the light of sustainable forest resources utilization and management in Côte d'Ivoire in the future.

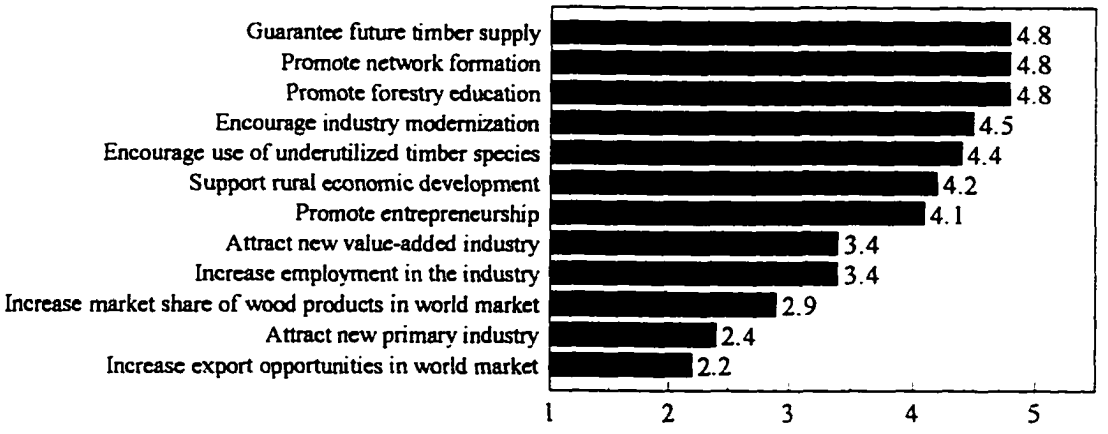


Figure 20. Forest Managers Importance of Forest Industry Development Scale: 1=very unimportant to 5=very important (n=25 respondents)

Forest Industry Promotion

A question related to forest industry promotion was asked to know about how forest managers feel about forest industry promotion in Côte d'Ivoire. Thirteen respondents (72.2 percent) indicated that existing secondary forest product industry should be promoted while four respondents (22.2 percent) believe that existing primary forest industry should be encouraged. Only one respondent (5.6 percent) said that attracting new secondary forest industry should be encouraged (Figure 21). Results indicate that respondents reject the expansion of secondary forest industry because of the severe deforestation (country has already lost 83% of its 16 million hectares) existing in Côte d'Ivoire. Respondents want the forest to be regenerated and protected rather than attract new secondary forest industry. Results demonstrate that respondents feel that improving forestry education and technology transfer would be currently very important if one wants to save the Ivorian forestland. Sustainable forest resources utilization and management should be the primary objectives in Côte d'Ivoire.

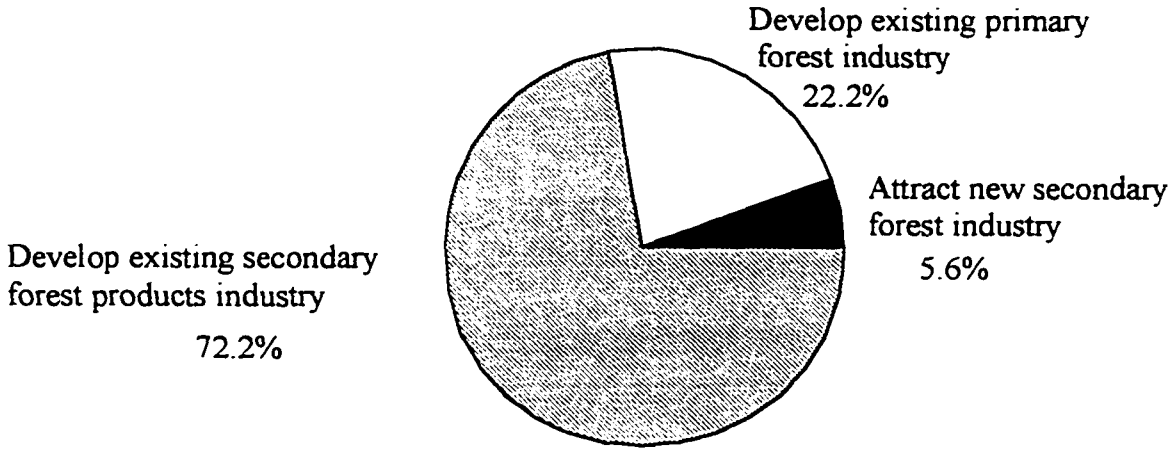


Figure 21. Forest Managers Perceptions of Forest Industry Promotion (n=25 respondents)

Methods Used to Promote New Markets

This question was written to find out whether forest managers had marketing strategies to promote new markets. The information obtained here identifies the methods that the respondents feel should be used to promote new markets of wood products in Côte d'Ivoire. Results indicate that forest managers believe in promoting new markets. The data reveal that 45.5 percent of respondents indicated that distributing product information through seminars and workshops was the best method used to promote new markets for forest products industry in Côte d'Ivoire. Slightly more than 27 percent of respondents said that advertising at trade shows should be used to promote new markets, and four respondents (18.2 percent) reported that publishing industry directories were tools that should be used to promote new markets (Figure 22). Although these methods are known by respondents to promote Ivorians new forest products markets; they strongly believe in forest development programs to control the

deforestation and to promote sustainable forest resources utilization and management in Côte d'Ivoire.

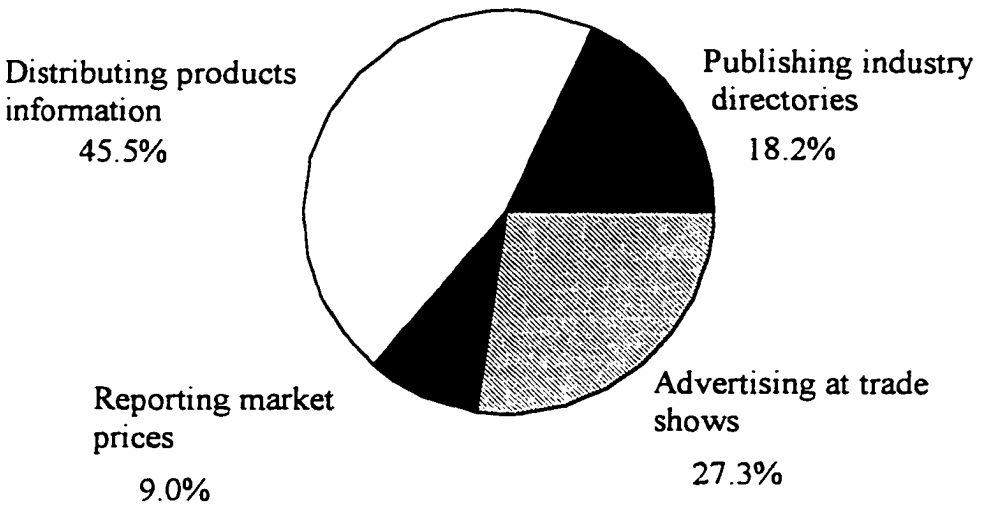


Figure 22. Forest Managers Perceptions of Promotional Methods of New Forest Products Markets (n=25 respondents)

OBJECTIVE 4: TO DETERMINE THE DEGREE OF INTERACTION BETWEEN FOREST MANAGERS AND OTHER STAKEHOLDERS.

Forest Managers Current and Desired Levels of Interaction with Other Stakeholders

Information regarding the current and desired levels of interaction of forest managers with other stakeholders is presented in Table 35. The weighted average of current level of communication with all other stakeholders was 3.3 on a five point Likert scale. On the other hand, respondents indicated a very high desire to interact with other stakeholders with a weighted average rating of 4.9. Refer to the section on tests of hypotheses for a full discussion on communication (Chapter 6). Results indicate that there were wide gaps between current and desired levels of communication between forest managers and the other stakeholder groups. Thus, significant

opportunities to increase participation in sustainable forest utilization and management in Côte d'Ivoire. For full discussion of communication and interactions among stakeholder groups refer to Chapter 6.

Table 35. Forest Managers Current and Desired Levels of Interaction with Other Stakeholders

(n=25 respondents)
Scale: 1= very low to 5= very high

Forest managers communication with:

Policymakers	(n= 21)
Current Level	Desired Level
4.2	5.0
University Officials	(n= 21)
Current Level	Desired Level
2.8	5.0
Wood Products Mfgs	(n= 20)
Current Level	Desired Level
2.4	4.8
Indigenous People	(n=24)
Current Level	Desired Level
3.4	5.0
Weighted Average	**Weighted Average**
Current Level	Desired Level
3.3	4.9

OBJECTIVE 5: TO DETERMINE THE AWARENESS OF ISSUES RELATED TO FOREST UTILIZATION AND MANAGEMENT.

The Elements and Issues Related to Forest Utilization and Management

The purpose of this question was to identify the most important elements of forest utilization and management from the perceptions of respondents. The elements and issues related to the forest utilization and management are as follows:

environmental awareness; financial assistance; technical assistance and management expertise.

Respondents believe that environmental awareness was an important factor with a mean rating of 4.7 on five point scale (Figure 23). Respondents indicated that all the other elements were also relatively important .

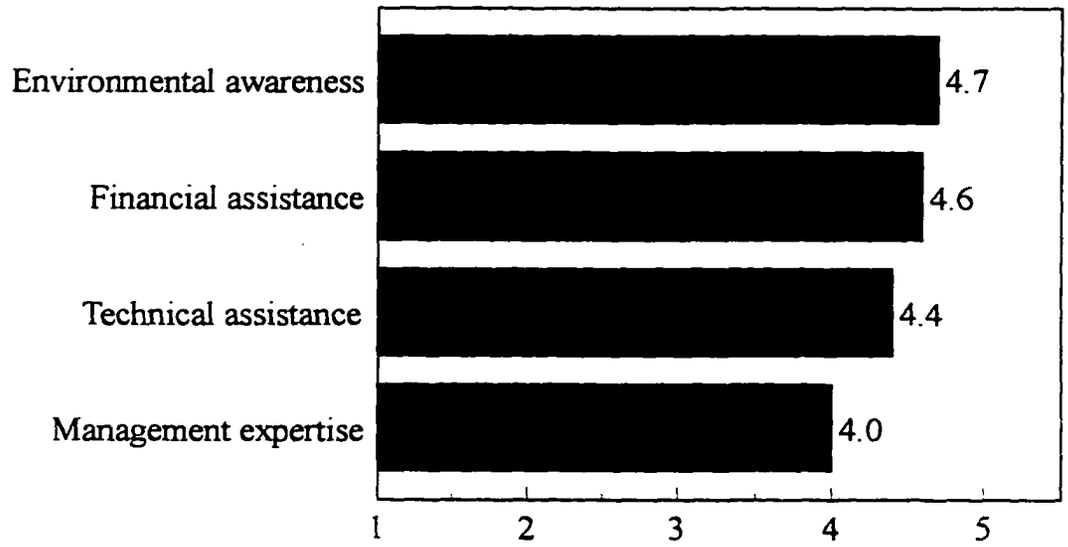


Figure 23. Forest Managers Perceptions of Elements of Forest Utilization and Management Scale: 1=very unimportant to 5=very important (n=25 respondents)

Government Policies Communication

A question was asked to the respondents to find out if they were informed about new forest policies and, if informed, how often policies were communicated. Seventy-five percent of respondents reported that they were informed about forest policies while 25 percent indicated that they were not informed. In this study, results show that there was two-way communication only between forest managers and policymakers in this case is the government. Communication between forest managers

and government policymakers is frequent because forest managers use policymakers theoretical ideas to perform their tasks.

Policy Administrator Assistance

The data indicate that 72 percent of respondents did receive assistance from forest policy administrators while 28 percent indicated that they received little or no assistance.

Forest Policy Decision-Making

The purpose of this question was to obtain the perception of the respondents about whether they were involved in forest policy decision-making processes. Nine respondents (36 percent) indicated that the rural community was sometimes involved in forest policy decision-making while sixteen respondents (64 percent) felt that the rural community was very often involved in forest policy decision-making. Therefore, forest managers believe that rural communities were generally involved in forest policy decision-making in Côte d'Ivoire.

Forest Development Programs

The purpose of this question was to obtain the current perceptions of respondents regarding forest development programs in Côte d'Ivoire and the different factors that influence these development programs. Although the elements were all valued as important (all mean ratings were greater than 3.0), respondents felt that forest resources considerations was the most important forest factor influencing development with a mean rating of 4.8 on a five point scale (Figure 24). From respondents' viewpoint, forest development programs were directly correlated with forest resources

considerations. As results forest resource consideration was the most important element while refering to forest development programs in Côte d'Ivoire.

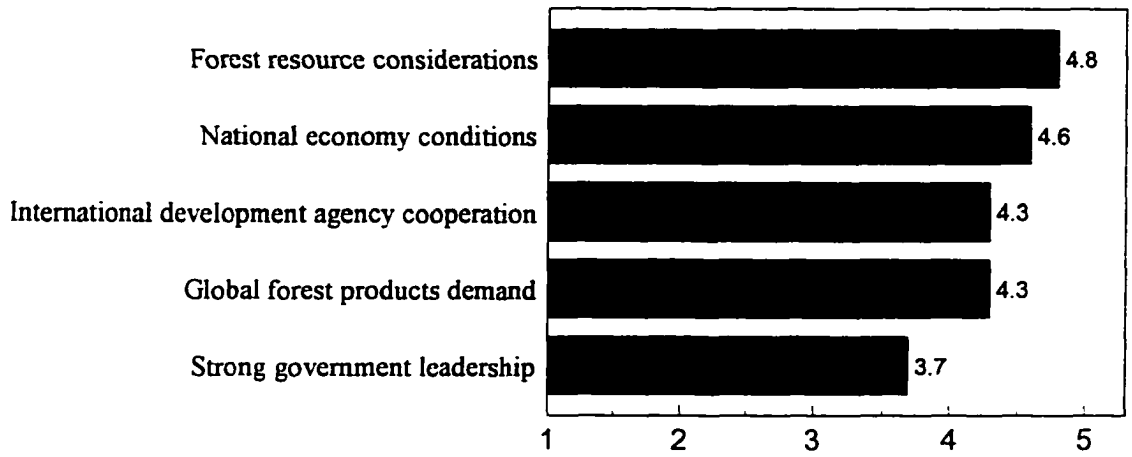


Figure 24. Forest Managers
Importance of Elements of Forest Development Programs
Scale: 1=very unimportant to 5=very important
(n=25 respondents)

Policymakers

Policymakers are government forestry administrators who create or propose forest policies and undertake the investments and development programs in forestry. Due to the importance policymakers play in forest management and protection in Côte d'Ivoire, the researcher found it absolutely necessary to include policymakers group in the study. The Ministry of Agriculture and Animal Resources is responsible for the management of the classified forests and determines concession allocations to industrial firms and private individuals. The Department of Forestry and Animal Resources within the Ministry of Agriculture and Animal Resources, has the delegated responsibility to manage the Ivorian forestland with the following four supportive services:

- Department of Natural Protection
- Department of Forest Products Production and Regeneration of Forest Resources

- Department of Forest Police and Surveillance
- National Committee of Defense Against Forest Fires

Department of Natural Protection

The National Parks and Reserves are managed by SODEFOR under the leadership of Department of Natural Protection. The Department of Natural Protection protects the National Parks and Reserves against illicit conversion of National Parks and Reserves into agricultural lands. The Department takes care of games and ecotourism activities. The Department also allows sustainable logging and regeneration of the National Parks and Reserves where logging takes place.

Department of Forest Products Production and Regeneration of Forest Resources

The main goal of this department is to manage and regulate logging activities as they affect the forest covers in rural domain. Rural domain is defined as non-classified forests where farming activities are allowed. The Department also manages forestlands outside the classified forests and promotes reforestation in the areas where logging activities are allowed. The Department is also responsible for promoting the idea of popular reforestation on national scale in order to sustain the deforestation in Côte d'Ivoire.

Department of Forest Police and Surveillance

The mission of the Department of Forest Police and Surveillance is to promote sustainable utilization of forest resources in relation to established laws and regulations. The Department of Forest Police and Surveillance has a mandate to evict illegal settlement of cocoa and coffee farmers who have created large perennial crop

plantations in the protected zones. Protected zones are adjacent to classified forests in order to restrain illegal farming activities.

National Committee of Defense Against Forest Fires

The committee educates the rural population against practices of forest fires. Local community leaders are actively involved in forest fires management. Forest fires are sometimes deliberately set by indigenous people for hunting and cultural practices in the community.

More than 25 policymakers' offices in 15 cities were visited by the researcher. The researcher interviewed 21 policymakers.

OBJECTIVE 1: TO IDENTIFY THE DEMOGRAPHIC CHARACTERISTICS OF POLICYMAKERS

Twenty-one policymakers participated in this study. Data regarding summary profile of the demographic characteristics of respondents are shown. These characteristics are age, gender, family size (number of children), education, occupation, annual income and energy type used for cooking and lighting.

Age

As seen in Table 36, fourteen respondents (66.7 percent) were between the ages of 20 and 40 and 33.3 percent of respondents were over 40 years of age. Policymakers' group was the youngest group among all the stakeholder groups.

Table 36. Age of Policymakers
(n=21 respondents)

Age	Number of Respondents	Percent
20-30	1	4.8
31-40	13	61.9
41-50	6	28.6
51-60	1	4.8

Gender

Twenty respondents (95.2 percent) were males and only one respondent (4.8 percent) was female.

Family Size (Number of Children)

Respondents information of family size is presented in Table 37. The data reveal that eleven policymakers (55 percent) had between 0 and 4 children, seven policymakers (35 percent) had between 5 and 9 children; and two respondents (10 percent) had more than 10 children.

Table 37. Family Size of Policymakers
(n= 21 respondents)

Family Size	Number of Respondents	Percent
0-4	11	55
5-9	7	35
10+	2	10

Occupation

The occupation of respondents is illustrated in Table 38. The data indicate that the majority of the respondents were forest police (25 percent), managers (25 percent), support staff (20 percent) and forest extension agents (15 percent). Forest police polices and maintains orders in the classified forests against illicit farmers; while forest managers manage the national parks, reserves and classified forests using technical knowledge. Supporting staff provides support to forest police and forest managers. Respondents interviewed had different responsibility in the execution of their tasks; but they were dependent on one another to perform their tasks. Although Policymakers

have same objectives with forest managers, their programs are often different. Policymakers' occupation is complementary to forest managers' occupation.

Table 38. Occupation by Policymakers
(n= 20 respondents)

Occupation	Number of Respondents	Percent
Forest Police	5	25
Manager	5	25
Support Staff	4	20
Forest Extension Agent	3	15
Director	2	10
Engineer	1	5

Annual Income

All policymakers had an annual income of less than or equal to US $9,000. The average annual income of the policymakers is US $2,620, which is below the national average annual income of US $3,000.

Energy Type Used

The data show that 57.1 percent of the respondents were using charcoal or fuelwood for cooking and lighting (Table 39). Nine respondents (42.9 percent) were using natural gas. Although policymakers were living in cities at close proximity of natural gas supply, their annual average income of $2,620 was relatively low. As a result, many policymakers could not afford natural gas for cooking and lighting.

Table 39. Energy Type Used by Policymakers
(n=21 respondents)

Energy Type Used	Number of Respondents	Percent
Fuelwood	3	14.3
Charcoal	9	42.9
Gas	9	42.9

OBJECTIVE 2: TO EXAMINE THE PERCEPTIONS OF POLICYMAKERS RELATED TO THEIR PARTICIPATION IN FOREST RESOURCES UTILIZATION AND MANAGEMENT

Land Tenure and Security

This question refers to land tenure and security in Côte d'Ivoire. The data indicate that 80.9 percent of the respondents believe that forestland was owned by the community and slightly more than 19 percent believe that forestland was not owned by the community but rather by the state. Nine respondents (45 percent) reported that they owned their land while 55 percent claimed that they did not own their land. All nine respondents indicated that they did not have title to the land (Table 40). The relevance of this question is that no one knows who is the owner of the forestlands in Côte d'Ivoire. Both government and indigenous people claim landownership. As a result, sustainable forest utilization and management activities are neglected by stakeholders and land tenure and security are doubtful.

Table 40. Policymakers Perceptions of Land Tenure and Security
(n= 21 respondents)

Question	Yes	Percent	No	Percent
Is the land owned by the community? (n= 21)	17	80.9	4	19.1
Do you own your land? (n= 20)	9	45	11	55.0
Do you have your land title? (n= 9)	0.0	0.0	9	100.0

Private Landownership

Twenty respondents (95.2 percent) believe that private landownership is either "important" or "very important". Only one respondent (4.8 percent) indicated that private landownership was unimportant (Table 41).

Table 41. Policymakers Perceptions of Private Landownership
(n=21 respondents)

Statement	Number of Respondents	Percent
Unimportant	1	4.8
Important	8	38.1
Very Important	12	57.1

Tree Planting and Forest Regeneration

Data show that 66.7 percent of respondents were growing trees while a third reported that they were not growing trees for forest regeneration practices.

Table 42. Policymakers Perceptions of Tree Planting and Forest Regeneration
(n= 21 respondents)

Question	Yes	Percent	No	Percent
Do you grow trees for the purpose of forest regeneration?	14	66.7	7	33.3

Role of Forests in Five Domains of Human Welfare in the Community

This question was asked to respondents to find out how much they value forest services. Data in Table 43 report the respondents attitudes related to the role of forests in five domains of human welfare. The scale used was 1= strongly disagree to 5= strongly agree. The table also reports the standard deviation of each statement. The statements forestland can be used for consumption of plants, animals, and derivatives and forestland is a source of living space had the highest mean rating of 5.0. The other statements had relatively high mean ratings of at least 4.0. These results show that respondents believe that the role of forests as important for human welfare, not only for protective services but some other important service such as forest provides oxygen to human.

Table 43. Policymakers Means and Standard Deviations for Items Related to Role of Forests in Five Domains of Human Welfare (n=21 respondents).

Statement Item	Mean	Standard Deviation
Forestland has protective services	4.9	0.2
Forestland has educational Services	4.8	0.9
Forestland has psychophysiological influences	4.4	1.4
Forestland can be used for consumption of plants, animals, and derivatives	5.00	0.00
Forestland is a source of living space	5.00	0.00

OBJECTIVE 3: TO DETERMINE THE PERCEPTION OF SUSTAINABLE FOREST INDUSTRY DEVELOPMENT

Forest Industry Development

Data in Figure 25 discuss respondents' mean attitude with regard to desired elements of forest industry development. The scale used was 1= very unimportant to 5= very important. The variable "encourage industry modernization" had the highest mean rating of 5.0, while the variable "attract new primary industry" had the lowest mean rating of 1.9. Knowing that the Ivorian forestland has almost disappeared, respondents believe that industry modernization should be necessary to minimize waste and promote high wood yield production. As a result, attracting new primary industry should be seen as obsolete idea in forest industry development in Côte d'Ivoire. Results show that policymakers believe that forest industry must be developed in that way forestland would be protected and the destruction of the forest would be minimized. Modernization of forest industry would reduce waste in the industry and promote efficiency. Policymakers believe that the modernization of the forest industry would sustain forest resources utilization and management in Côte d'Ivoire.

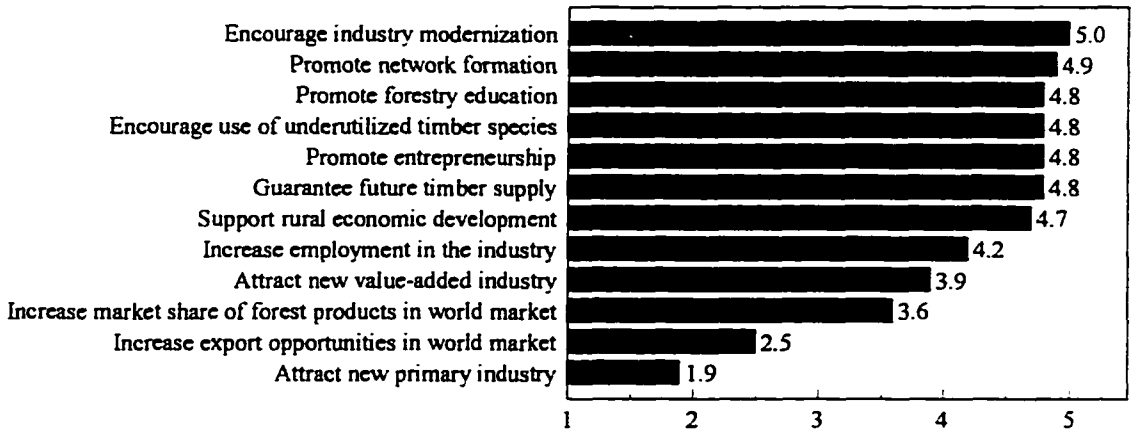


Figure 25. Policymakers Perceptions of Elements of Forest Industry Development Scale: 1=very unimportant to 5=very important (n=21 respondents)

Forest Industry Promotion

A question was asked to the respondents to obtain their viewpoints regarding the type of forest industries that should be promoted. Twelve respondents (66.7 percent) believe that existing secondary forest products industry should be promoted. Slightly more than 22 percent of the respondents felt that existing primary forest industry should be encouraged. Only 11.1 percent of the respondents reported that attracting new secondary forest product should be encouraged (Figure 26).

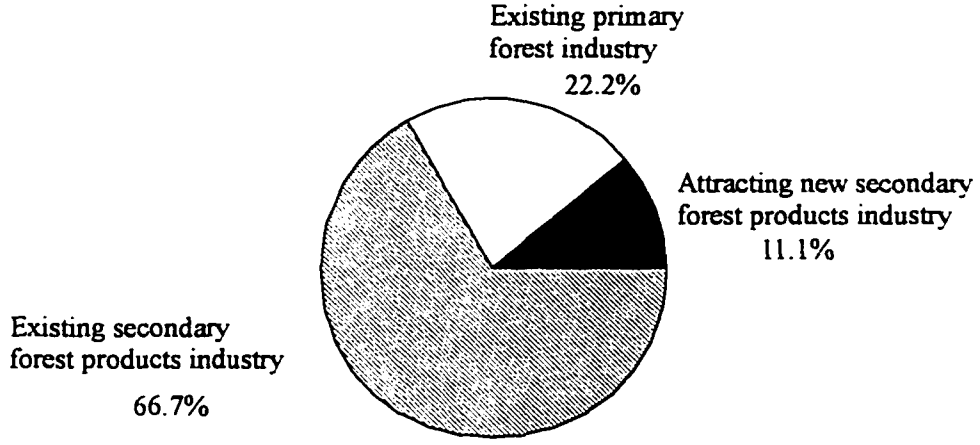


Figure 26. Policymakers Perceptions of Forest Industry Promotion (n=21 respondents)

Methods to Promote New Markets

Data in Figure 27 show that 31.6 percent of the respondents indicated that advertising at trade shows was the best method used to promote new markets for forest products industry. The same percentage (31.6 percent) reported that distributing product information was the best method for promoting new markets. All other methods of promotion were considered less important.

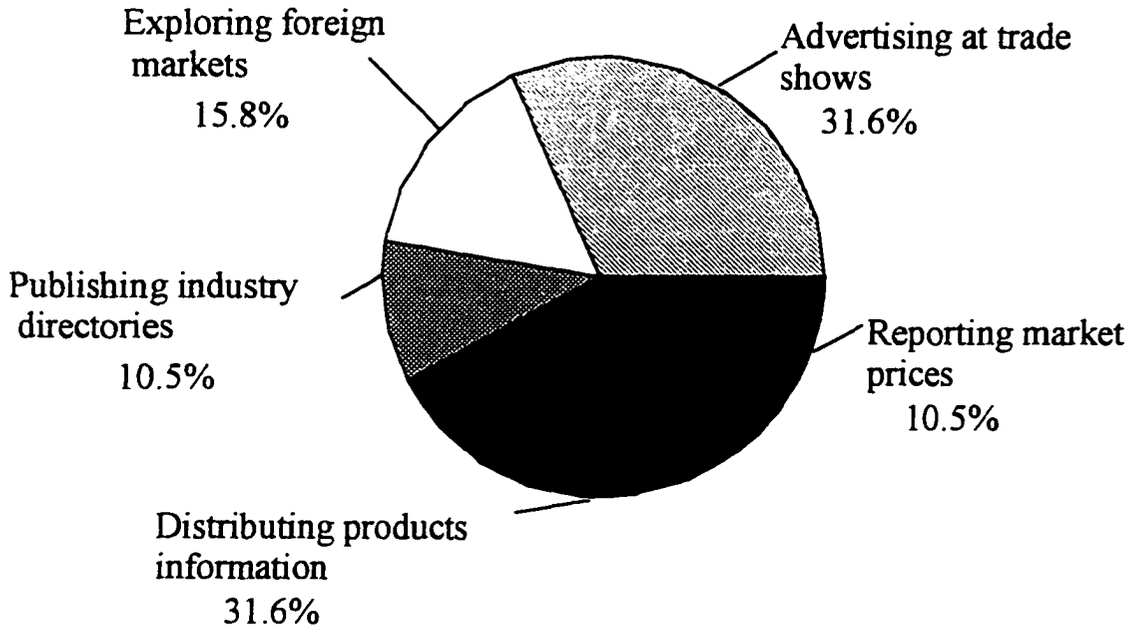


Figure 27. Policymakers Perceptions of Promotional Methods of New Forest Products Markets (n= 21 respondents)

OBJECTIVE 4: TO IDENTIFY FOREST RELATED INTERACTION BETWEEN POLICYMAKERS AND OTHER STAKEHOLDERS

Level of Interaction Between Policymakers and the Other Stakeholders

Data in Table 44 show the degree of interaction between policymaker respondents and the other stakeholders. Respondents indicated that their current level of interaction with other stakeholders had weighted average rating of 3.5 on a five point

scale. This indicates that the current level of interaction with other stakeholders is slightly above neutral . However, respondents indicated a very high desire to communicate with a weighted average rating of 5.0. Policymakers' current level of interaction with university officials was the lowest with a mean rating of 2.0. A full discussion of communication is found in the section of tests of hypotheses related to communication links among stakeholders (Chapter 6).

Table 44. Policymakers Current Level of Interaction with Other Stakeholders

(n= 21 respondents)
Scale: 1= very low to 5= very high

Policymakers communication with:

Forest Managers	(n= 25)
Current Level	Desired Level
4.1	5.0
University Officials	(n= 13)
Current Level	Desired Level
2.0	5.0
Wood Products Mfgs	(n= 20)
Current Level	Desired Level
3.7	5.0
Indigenous People	(n= 24)
Current Level	Desired Level
3.5	5.0
Weighted Average	**Weighted Average**
Current Level	Desired Level
3.5	5.0

OBJECTIVE 5: TO DETERMINE THE AWARENESS OF ISSUES RELATED TO FOREST UTILIZATION AND MANAGEMENT

The issues related to forest utilization and management are as follows: forest utilization and management practices, forest regeneration, forests program development and participation in forest policy decision-making processes.

The Elements and Issues Related to Forest Utilization and Management

Figure 28 shows the respondents attitudes as related to the elements of forest utilization and management practices. Respondents believe that all the elements were relatively important factors in forest utilization and management practices.

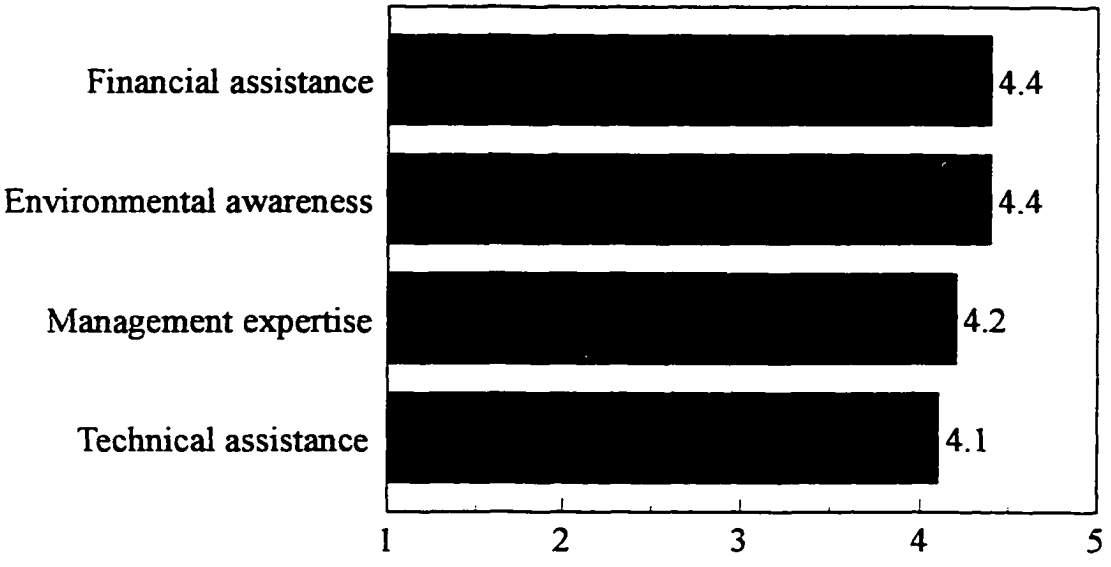


Figure 28. Policymakers Perceptions of Elements of Forest Utilization and Management Scale: 1=very unimportant to 5=very important (n=25 respondents)

Time Required to Regenerate Forests

Eleven respondents (52.4 percent) indicated that it takes more than 24 years for a forest to completely regenerate. Four respondents (19.1 percent) reported that forests take between 18 and 23 years to recover their ecological balance. Six respondents

(28.5 percent) revealed that a forest can gain its ecological balance in less than 18 years (Figure 29). The relevance of this question was to show that depleted forests do not regenerate over a short-time period; therefore forest utilization and management should be a well thought out and sustainable approach.

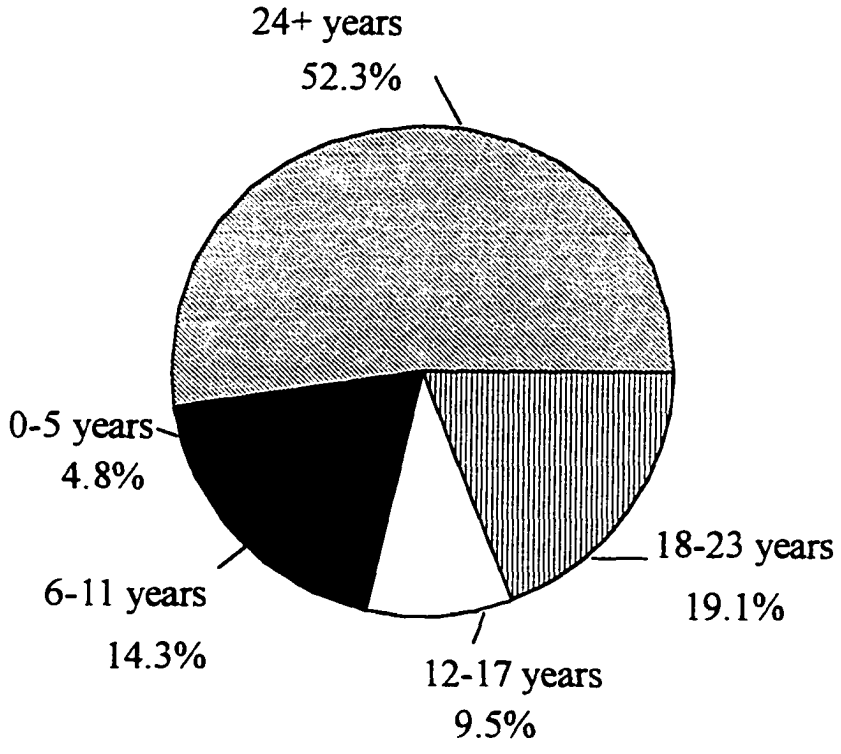


Figure 29. Policymakers Perceptions of Time Required to Regenerate Forests (n=21 respondents)

Forest Development Programs

Figure 30 shows the respondent perceptions of factors that should be included in forest resource development programs. Respondents believe that even though all the programs were relatively important, "global forest products demand" was the most

important program with a mean rating of 4.9 on a five point scale. This means that the continuous global forest products demand will promote and encourage forest resource development programs in Côte d'Ivoire.

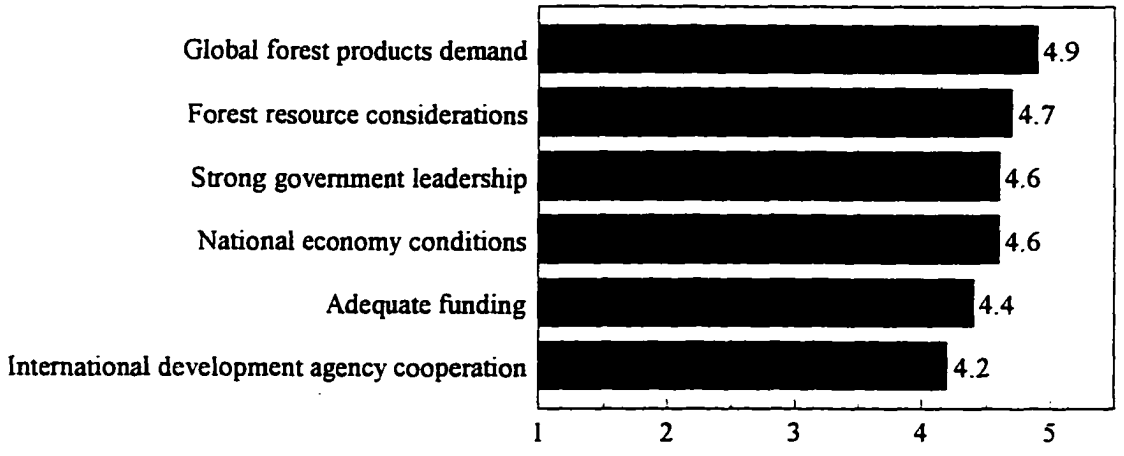


Figure 30. Policymakers Perceptions of Forest Development Programs Scale: 1=very unimportant to 5= very important (n=21 respondents)

Forest Policy Decision-Making

This question was asked to responendents to discuss how often they were involving indigenous people in the decision-making processes. Results show that fifty percent of respondents reported that the indigenous people were very often involved in policy decision-making processes. Twenty-five percent indicated that indigenous people were sometimes involved in policy decision- making processes and 25 percent of respondents reported that the indigenous people were never involved in decision-making processes (Figure 31). Although most of the respondents indicated that indigenous people were very often involved in their decision-making processes, oppotunities were still existing to attract more of the indigenous people in the decision-making processes.

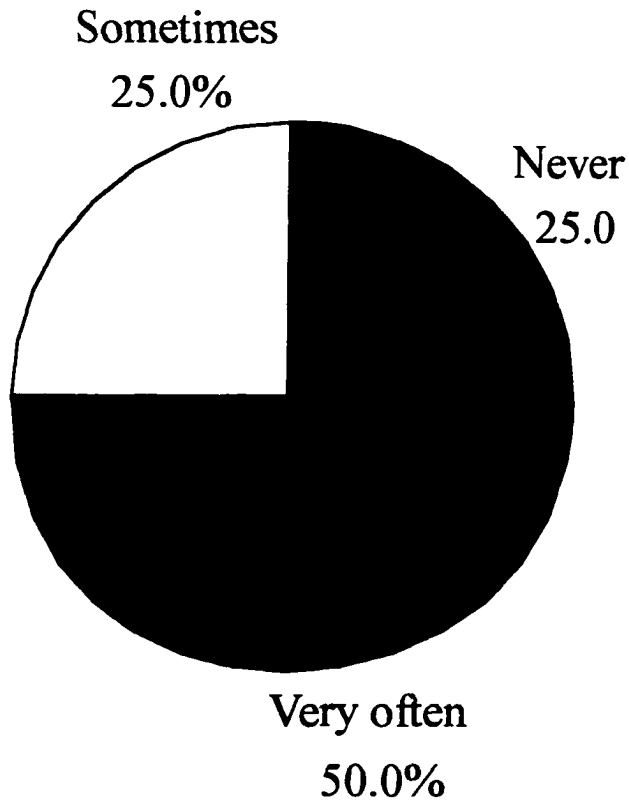


Figure 31. Policymakers Perceptions of Participation in Forest Policy Decision-Making Processes (n=21 respondents)

Wood Products Manufacturers

There are 104 registered sawmills in Côte d'Ivoire with 96 sawmills currently operating. Total volume of production is estimated at 3 million cubic meters. Eighty-five percent of the total production volume is exported to Europe and 15 percent is consumed domestically and/or exported elsewhere (NTDB 1996).

All the sawmills in Côte d'Ivoire are privately owned by Ivorians, Italians, Lebanese and joint ventures. The Ivorian share of the total capital is estimated at 39 percent of total volume of wood products production (NTDB 1996). San-Pedro is the capital of wood products processing. It is located in the southwestern part of the country, about 300 kilometers from Abidjan. San-Pedro has more than 25 sawmills.

The researcher spent 14 days in San-Pedro in order to establish contacts with the directors and program leaders of sawmill companies. A total of 12 directors and program leaders were interviewed. In addition, the researcher interviewed 8 directors and program leaders in three other cities (Divo, Gagnoa, and Lakota) to gather information in different geographic and cultural environments.

Three objectives were:

- To identify the most important tree species used in wood products production
- To define the wood products markets and justify the fundamental reasons for their choice
- To identify pricing objectives, strategies, and the promotional tools used to market the wood products

OBJECTIVE 1: TO IDENTIFY THE DEMOGRAPHIC CHARACTERISTICS OF THE WOOD PRODUCTS MANUFACTURERS

Summary profile of the demographic characteristics are displayed. These characteristics include age, gender, family size (number of children), education, occupation, annual income and energy.

Age

As seen in Table 45, 13 respondents (65 percent) were 41 years of age and older while seven respondents (35 percent) were less than 41 years of age.

Table 45. Age of Wood Products Manufacturers
(n= 20 respondents)

Age	Number of Respondents	Percent
20- 40	7	35
41+	13	65

Gender

All wood products manufacturers respondents were males.

Family Size (Number of Children)

The family size of wood products manufacturers is presented in Table 46. The data show that 90 percent of respondents had between 0 and 4 children and 10 percent had between 5 and 9 children.

Table 46. Family Size of Wood Products Manufacturers
(n= 20 respondents)

Family Size	Number of Respondents	Percent
0-4	18	90
5-9	2	10

Education

The data show that 50 percent of respondents had undergraduate education. Thirty five percent completed graduate studies and 15 percent were high school graduates (Table 47).

Table 47. Education Received by Wood Products Manufacturers
(n= 20 respondents)

Education	Number of Respondents	Percent
High School	3	15
Undergraduate	10	50
Graduate	7	35

Occupation

This question was asked to know about the leadership position of the respondents. The data in Table 48 report summary information of wood products manufacturers' occupations. Thirteen respondents (65 percent) were general managers. Four respondents (20 percent) were financial managers and 15 percent were personnel managers and owner. Even though the titles of respondents were different, all respondents were almost performing the same tasks in their respective organizations.

Table 48. Occupation by Wood Products Manufacturers
(n= 20 respondents)

Occupation	Number of Respondents	Percent
General manager	13	65
Financial Manager	4	20
Personnel	2	10
Owner	1	5

Annual Income

Information regarding the respondents' annual income is reported in Table 49. The study shows that the annual income of wood products manufacturers was distributed across all income categories. Five respondents (25 percent) were earning an annual income of US $9,000 which was way above the national average of US $3,000. Another five respondents (25 percent) had an annual income between US $18,001 and US $28,000 and five other respondents (25 percent) were earning an annual income between US $58,001 and US $68,000. Ten percent of the respondents were earning between US $9,001 and US $18,000. Two respondents (10 percent) were earning between US $38,001 and US $48,000 and only one respondent was earning between US $28,001 and US $38,000 annually. This stakeholder group was the only group with high earning power among the other stakeholder groups, with an average annual income of US $29,825, which was nearly ten times the average national annual income. This was due to the fact that directors and/or managers were often European and were owners of the companies. Most of respondents said that their profit was their income. While evaluating the individual income of respondents few had relatively low income but their income was much higher than the indigenous people, policymakers, forest managers and university's incomes.

Table 49. Wood Products Manufacturers Annual Income
(n= 20 respondents)

Annual Income	Number of Respondents	Percent
0-$9,000	5	25
$9,001-$18,000	2	10
$18,001-$28,000	5	25
$28,001-$38,000	1	5
$38,001-$48,000	2	10
$58,001-$68,000	5	25

Energy Type Used

Information regarding energy type used by wood products manufacturers is reported in Table 50. Seventeen respondents (85 percent) indicated that they are using natural gas for cooking and lighting. Two respondents (10 percent) reported that they were using charcoal and only five percent reported fuelwood as a primary source of energy.

Table 50. Energy Type Used by Wood Products Manufacturers
(n= 20 respondents)

Energy Type Used	Number of Respondents	Percent
Fuelwood	1	5
Charcoal	2	10
Gas	17	85

OBJECTIVE 2: TO EXAMINE THE PERCEPTIONS OF THE WOOD PRODUCTS MANUFACTURERS RELATED TO THEIR PARTICIPATION IN FOREST RESOURCES UTILIZATION AND MANAGEMENT

Land Tenure and Security

Table 51 displays the summary of wood products manufacturers perceptions of land tenure and security in Côte d'Ivoire. Seventeen respondents (85 percent) indicated that forestland was owned by the community. Two respondents (10 percent) did not

express their opinions and only one respondent (5 percent) reported that the land was not owned by the community. Three respondents (15 percent) indicated that their land belonged to them. Sixteen respondents (80 percent) felt that the land was not theirs and only one respondent (5 percent) did not express his or her opinion. Twenty percent of the respondents reported that they did not have land titles and the other 80 percent did not give opinions (Table 51).

Table 51. Wood Products Manufacturers Perceptions Of Land Tenure and Security
(n= 20 respondents)

Question	Yes	Percent	No	Percent	No Opinion	Percent
Is the land owned by the community? (n= 18)	17	85.0	1	5.0	2	10.0
Do you own your land? (n= 19)	3	15.0	16	80.0	1	5.0
Do you have your land title? (n= 20)	0	0.0	4	20.0	16	80.0

Plantations and Hectares Owned

A question was asked to evaluate if the respondents own cash crop plantations. Three respondents (25 percent) reported that they had plantations and nine respondents (75 percent) indicated that they did not own any plantations. Among the plantation owners, one respondent (5 percent) owned a 2 hectare of plantation; one respondent (5 percent) owned 10 hectares; another respondent (5 percent) owned 20 hectares and 17 respondents (85 percent) did not make any comments (Table 52 & 53). The rationale of this question was to know if government workers, private forestry sector professionals and indigenous people all own perennial crop plantations. Knowing this information would help government to better understand the fundamental causes of

deforestation in Côte d'Ivoire and come up with refine forest policies to better manage forest resources utlization in Côte d'Ivoire.

Table 52. Plantations Ownership by Wood Products Manufacturers
(n= 12 respondents)

Question	Yes	Percent	No	Percent
Do you have a plantation?	3	25.0	9	75.0

Table 53. Hectares Ownership By Wood Products Manufacturers
(n= 20 respondents)

Hectares	Number of Respondents	Percent
No opinion	17	85.0
2	1	5.0
10	1	5.0
20	1	5.0

Land Sales

All respondents reported that they had never sold land.

Private Landownership

All respondents indicated that it was important or very important to have a private landownership (Table 54). Since the actual land ownership is claimed by the community, forestland is often used unsustainably and land are sold to newcomers in the community. The ownership rights would promote sustainable forest resources utilization and management in Côte d'Ivoire.

Table 54. Wood Products Manufacturers Perceptions of Private Landownership
(n= 20 respondents)

Statement	Number of Respondents	Percent
Important	4	20.0
Very Important	16	80.0

Role of Forests in Five Domains of Human Welfare in the Community

Data in Table 55 show the respondents' attitudes related to the role of forest in five domains of human welfare. The scale used was 1= strongly disagree to 5= strongly agree. In the Table, the standard deviation for each statement is also shown. Except the statement "forestland has psychophysiological influences" that had a mean rating of 3.5, all other statements had relatively high mean ratings (4.0 and above). Overall, respondents feel that forestlands play an important role in their daily lives.

Table 55. Wood Products Manufacturers Means and Standard Deviations of Items Related to the Role of Forests in Five Domains of Human Welfare
(n= 20 respondents)

Statement	Mean	Standard Deviation
Forestland has protective services	4.8	.91
Forestland has educational services	4.7	.57
Forestland has psychophysiological influence	3.4	1.1
Forestland can be used for consumption of plants, animals and derivatives	4.6	.61
Forestland is a source of living space	4.8	.44

OBJECTIVE 3: TO DETERMINE THE PERCEPTION OF SUSTAINABLE FOREST INDUSTRY DEVELOPMENT

Forest Industry Development

Data in Figure 32 report the respondents attitudes related to forest industry development. The scale used was 1= very unimportant to 5= very important. With a mean rating of 5.0, respondents indicated that "guarantee future timber supply" was very important and the least important statement was to "attract new primary industry" with a mean rating of 1.4. Most of the other statements were relatively important except the statement "attract new value added industry" which had a mean rating of

3.4. Results show that it would be preferable now to guarantee future timber supply. Respondents believe that large scale forest regeneration will increase forest cover in Côte d'Ivoire and research intensification in the domain of underutilized timber species should be very determinant to guarantee future timber supply. Respondents feel that better results can be reached if everyone understands the need.

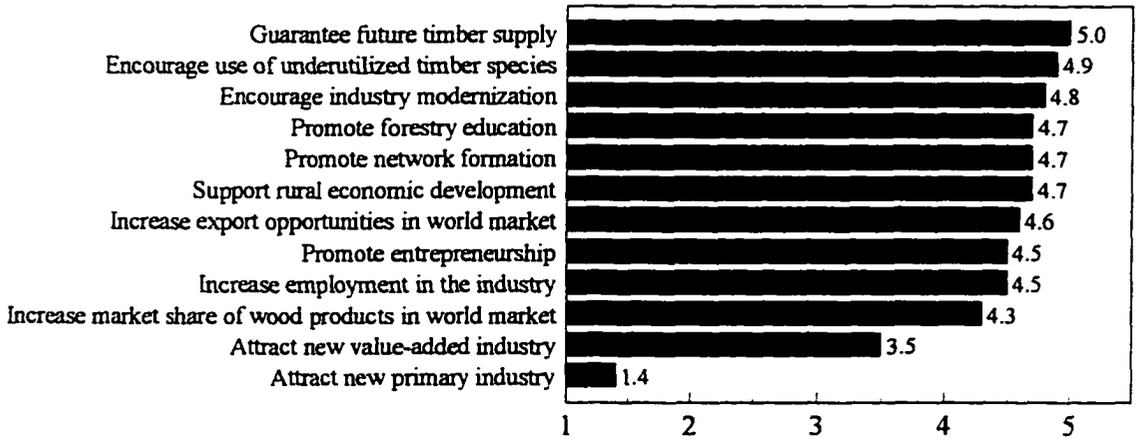


Figure 32. Wood Products Manufacturers
Importance of Elements of Forest Industry Development
Scale: 1=very unimportant to 5=very important
(n=20 respondents)

Forest Industry Promotion

A question related to forest industry promotion was asked. All respondents indicated that "existing secondary forest products industry" should be promoted.

Methods to Promote New Markets

The data in Figure 33 show the best methods used to promote new markets for wood products industry. Six respondents (31.6 percent) believe that "distributing product information" was the best method used to promote new markets for forest products industry. Five respondents (26.3 percent) believe that "foreign market exploration" method was used to promote new markets. Slightly more than 21 percent

of respondents believe that "advertising at trade shows" was the method used to promote new markets for wood products industry. Almost 16 percent reported that "distributing product information" was used to promote markets and only slightly more than five percent of respondents used other methods to promote new markets for their products.

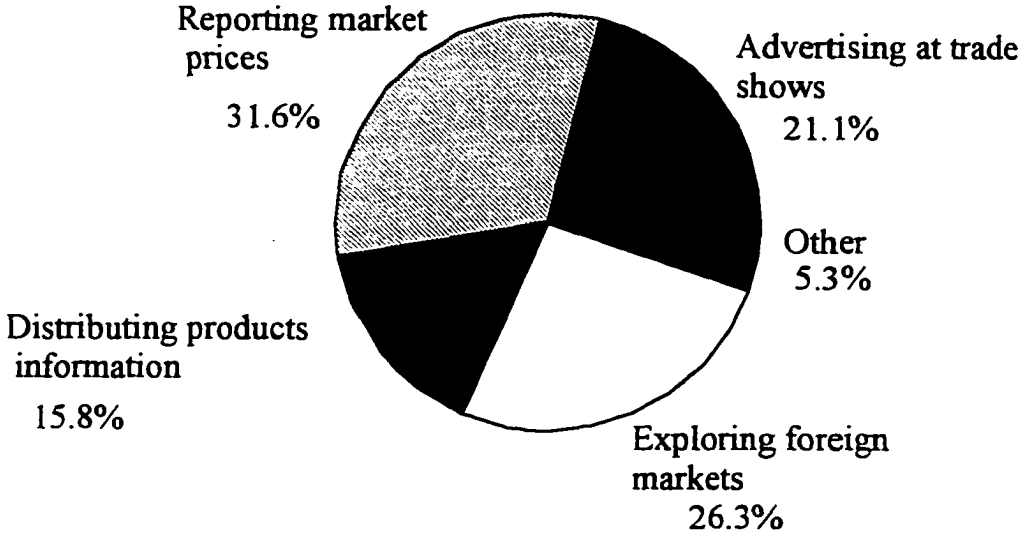


Figure 33. Wood Products Manufacturers Perceptions of Promotional Methods of New Forest Products Markets (n=20 respondents)

OBJECTIVE 4: TO IDENTIFY FOREST RELATED INTERACTION BETWEEN THE WOOD PRODUCTS MANUFACTURERS AND OTHER STAKEHOLDERS

Information in Table 56 shows the level of interaction between wood products manufacturers and other stakeholders. Respondents believe that their current level of interaction with the other stakeholders is neither very low nor very high with a weighted average mean rating of 3.4. The scale used was 1= very low to 5= very high. On the other hand, with a weighted average mean rating of 4.8, respondents expressed

a high desire of interaction with the other stakeholders. A full discussion of communication is found in the section of tests of hypotheses related to communication links among stakeholders (Chapter 6).

Table 56. Wood Products Manufacturers Current and Desired Levels Of Interaction With The Other Stakeholders
(n=20 respondents)
Scale: 1= very low to 5= very high

Wood products manufacturers communication with:

Policymakers	(n= 21)
Current level	Desired Level
3.5	4.9
University Officials	(n= 13)
Current Level	Desired Level
1.6	4.5
Indigenous People	(n= 24)
Current Level	Desired Level
4.2	4.9
Forest Managers	(n= 25)
Current Level	Desired Level
3.4	4.8
Weighted Average	**Weighted Average**
Current Level	Desired Level
3.4	4.8

OBJECTIVE 5: TO DETERMINE THE AWARENESS OF ISSUES RELATED TO FOREST UTILIZATION AND MANAGEMENT

The data in Figure 34 show respondents attitudes related to elements in forest utilization and management. Even though all statements were relatively important, respondents reported that technical assistance was the most important item with a mean

rating of 4.8. Respondents believe that all the elements are important for forest development programs in Côte d'Ivoire

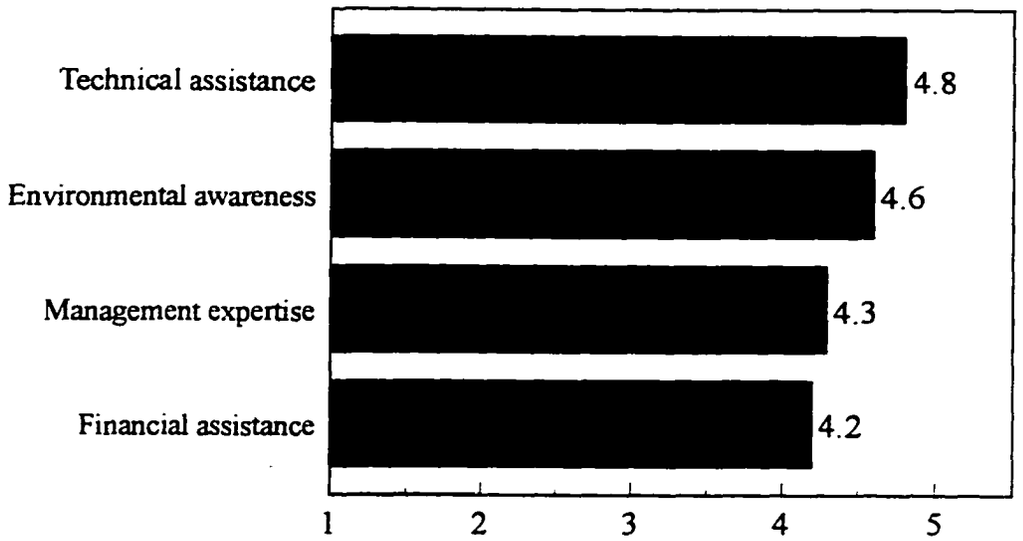


Figure 34: Wood Products Manufacturers Perceptions of Elements of Forest Utilization and Management Scale: 1=very unimportant to 5= very important (n=20 respondents)

Government Policies Communication

A question was asked to the respondents to find out if they were informed about new forest policies and, if informed, how often the policies were communicated. Seventy five percent of respondents believe that they were not informed about forest policies or if informed, policies were communicated to them after 24 months. Only 25 percent of the respondents indicated that they were receiving forest policies information in at most 12 months.

Policy Administrator Assistance

The purpose of this question was to evaluate if wood products manufacturers were assisted by policymakers to discuss issues related to forest utilization and management. Forty percent of respondents indicated that forest officials were very

seldom assisting them to discuss issues related to the use of forestland. Thirty percent revealed that they received no assistance. Five respondents (25 percent) reported that they were receiving assistance from forest officials every six months and only 5 percent indicated that they were receiving assistance but only every 24 months or longer (Figure 35).

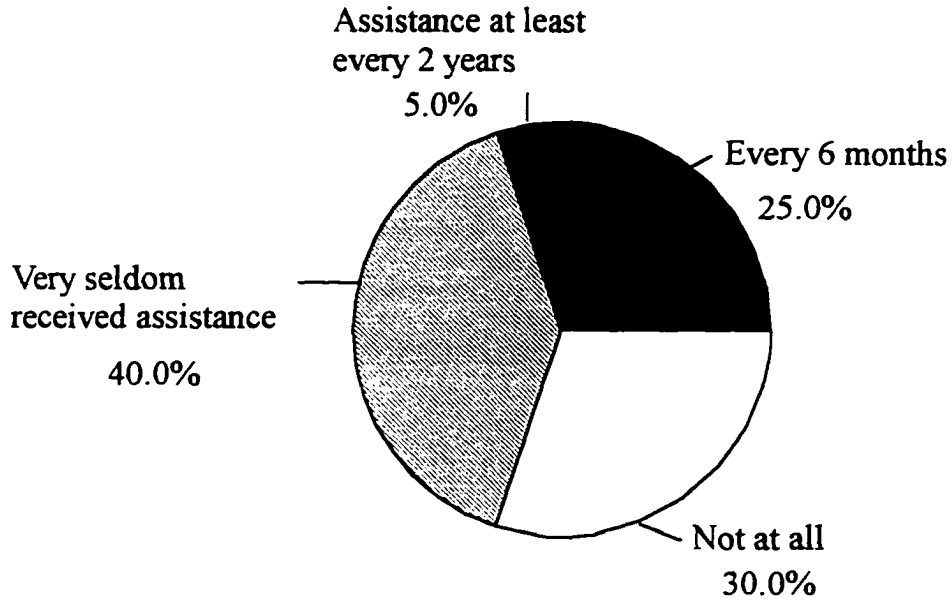


Figure 35. Wood Products Manufacturers Frequency of Assistance Received (n=20 respondents)

Forest Policy Decision-Making

This question was asked to obtain the viewpoints of the respondents about whether they were involved in forest policy decision-making processes. Fifty percent believe that wood products manufacturers were very often involved in forest policy decision-making, 45 percent reported they were sometimes involved and only 5 percent revealed they were never involved in forest policy decision-making processes (Figure 36).

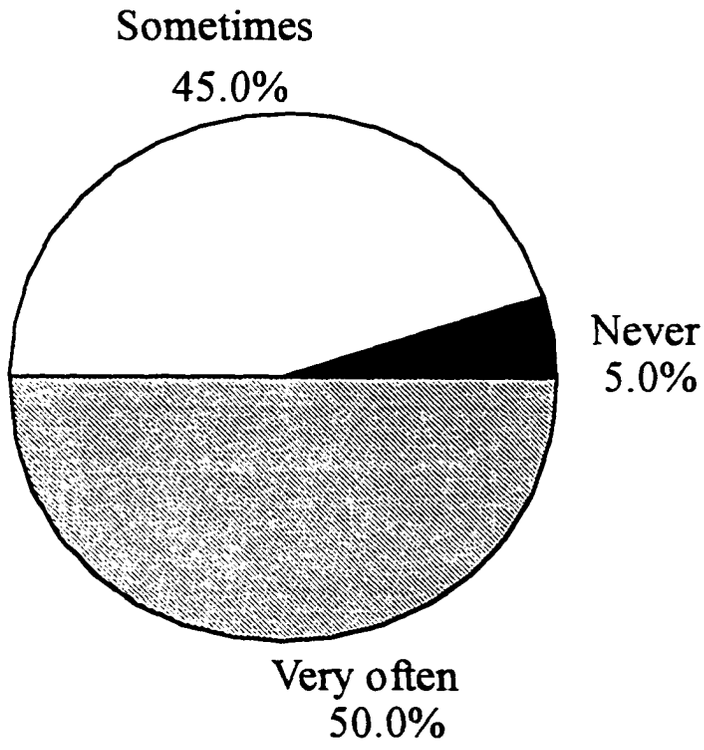


Figure 36. Wood Products Manufacturers Perceptions of Participation in Forest Policy Decision-Making Processes (n=20 respondents)

Forest Development Programs

The purpose of this question was to identify the most important forest development programs in Côte d'Ivoire. Respondents reported that "global forest products demand" and "adequate funding" were neither low nor high with mean ratings of 3.8 and 3.9 (Figure 37). Although the other remaining programs were relatively valued the same, respondents felt that "national economy consideration" factors were the most important program influencing the forest development with a mean rating of 4.7.

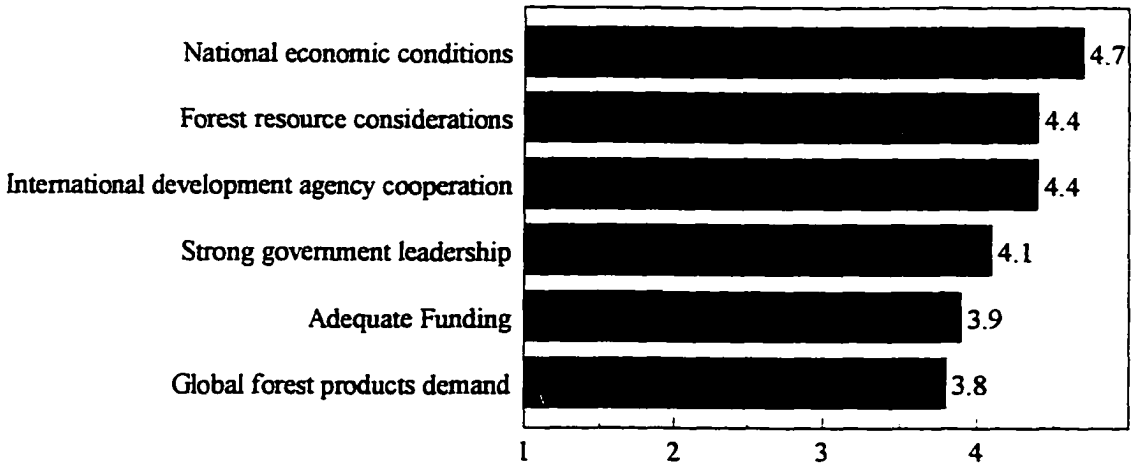


Figure 37. Wood Products Manufacturers Perceptions of Forest Development Programs Scale: 1=very unimportant to 5=very important (n=20 respondents)

OBJECTIVES 6: TO IDENTIFY THE MOST IMPORTANT TREE SPECIES USED IN WOOD PRODUCTS PRODUCTION

Tree Species Used in Wood Products Production

The data in Figure 38 identify the most important tree species used in wood products production. The respondents believe that the current most important tree species used is iroko (mean rating = 4.5) and the current least important species used is Bete. Iroko is a valuable tree species which currently has a lucrative market in Europe. Iroko wood production represents one-third of the total wood production in Côte d'Ivoire. Since log exports are banned, processed products are exported. These species are used in furniture industry as well as in wood carving industry in Côte d'Ivoire. They are also processed into lumber, plywood and veneer sheets and are used in industrial and residential construction. Iroko and sipo timbers are available in northern savannah as well as in southern forested regions. There is enough supply for these

timber species in coming few years for wood products production, domestic consumption and exports.

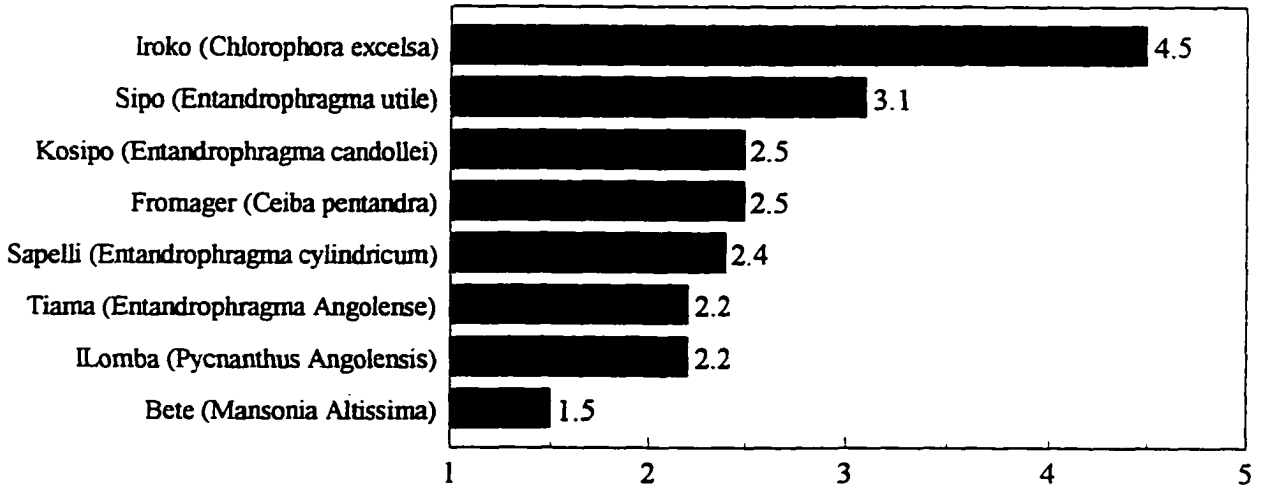


Figure 38: Wood Products Manufacturers
Importance of Tree Species Used in Wood Products Production
Scale: 1=very unimportant to 5= very important
(n=20 respondents)

OBJECTIVE 7: TO DEFINE THE WOOD PRODUCTS MARKETS AND JUSTIFY THE FUNDAMENTAL REASONS

Wood Products Markets

The data in Figure 39 report 1996 market information of wood products manufacturers. Respondents believe that 57.6 percent of their wood products were marketed in Europe while slightly more than 20 percent were marketed in Côte d'Ivoire. A question was asked to the respondents to explain why the large volume of their wood products was exported to Europe. Sixty-five percent of the respondents believe that wood products had better prices in Europe and 30 percent said that diversity in markets was the key reason for selling their products elsewhere (Figure 39). Overall the global market attract quality tropical hardwoods and since the domestic

market is not significant, wood products manufacturers look into the opportunities of foreign markets where prices are also attractive. As a result, a larger volume of hardwood timber is exported each year.

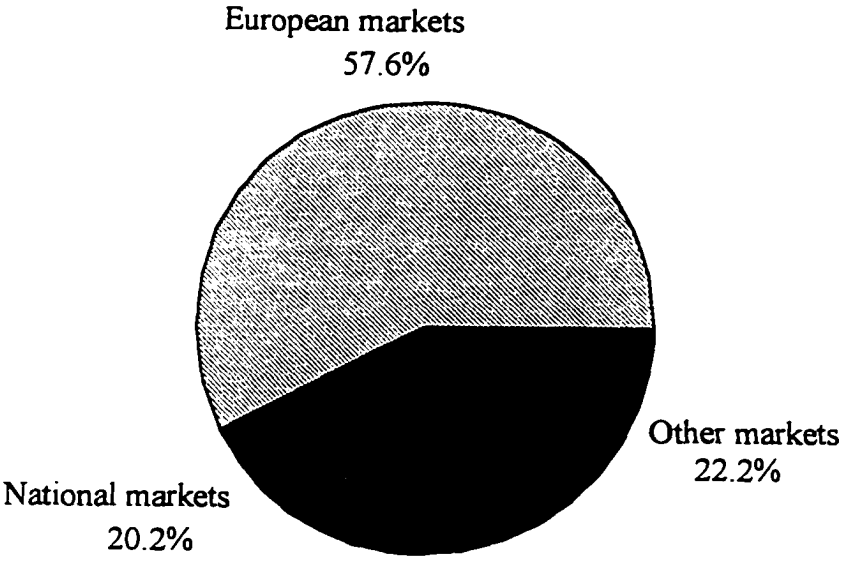


Figure 39. Wood Products Manufacturers
1996 Wood Products Markets
(n= 20 respondents)

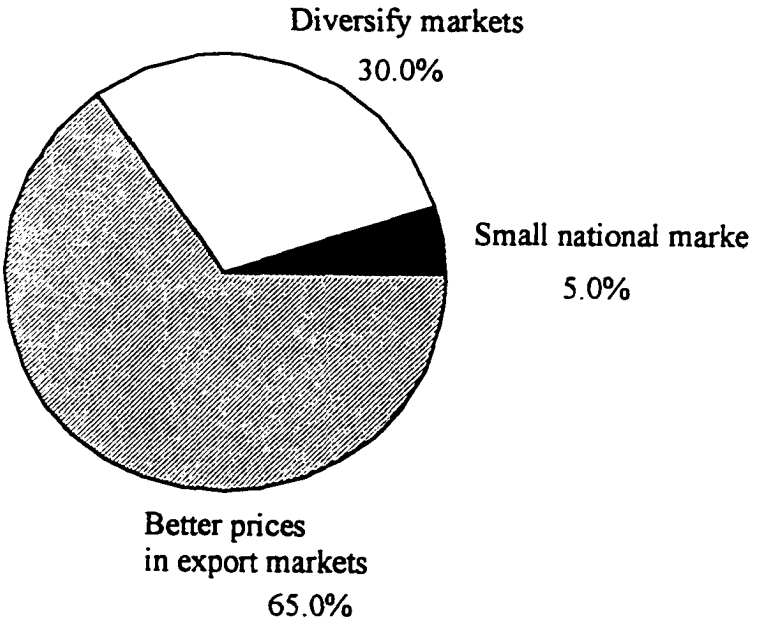


Figure 40. Wood Products Manufacturers
Reasons to Export Wood Products
(n=20 respondents)

OBJECTIVE 8: TO IDENTIFY PRICING OBJECTIVES AND STRATEGIES TO MARKET WOOD PRODUCTS

Pricing Objectives

A question was asked to the respondents to determine their pricing objectives and strategies when marketing their wood products. Ninety-five percent of respondents believe that profit was their primary objective when pricing their products. Only 5 percent of respondents indicated that market share was their pricing objective. It was clear that wood products were priced for the purpose of profit, perhaps indicating that there was a high demand for Ivorian hardwood products. Since this demand already existed, pricing strategies based on market share were not very popular among the wood products manufacturers.

Pricing Strategies

Eighty-five percent of the respondents used cost-based strategy to market their products while 15 percent used demand-based strategy. Cost-based refers to the strategy that takes into account the cost of the production while fixing the price of the wood products. Demand-based strategy is defined as a strategy that takes into account the overall demand for the wood products in the market before pricing is done. This might indicate the existence of a high demand for tropical hardwood in the global market.

Promotional Tools to Market Wood Products

The purpose of this question was to identify the promotional tools used by wood products manufacturers to market their products. Forty percent of respondents believe that word-of-mouth and networking were the best promotional tools used to market their products (Figure 41).

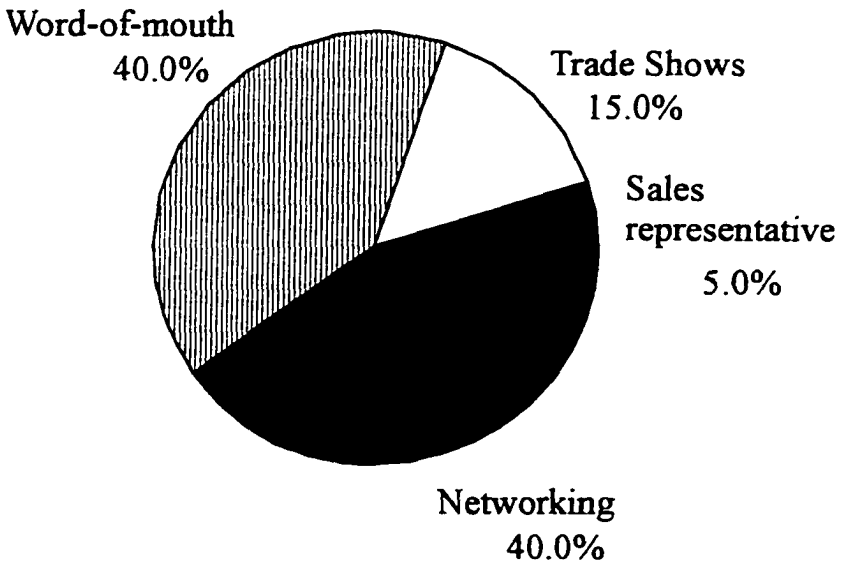


Figure 41: Wood Products Manufacturers Promotional Tools Used (n=20 respondents)

Summary

In summary, there were many notable differences among the stakeholder groups. In general, the indigenous people were less educated and earned less than the other stakeholder groups. They were also the only group that used fuelwood as the main source of energy. In contrast, the wood products manufacturers who had highest earning power, and the university officials who were the most educated, tended to use natural gas as the main energy source. The policymakers and the forest managers who had annual average incomes closer to the national average, tended to use mixed sources of energy. It is evident that all the stakeholder groups desired a high level of communication with each other. However, their perceptions of the current level of communication was varied, with the indigenous people and the university officials believing that the current communication levels were low. Further, the indigenous

people and the university officials felt that they were not involved in the decision-making processes in forest policies.

While stakeholder groups believe in forest industry development, they strongly feel that it would be very important to guarantee future timber supply. The fast way of guaranteeing future timber supply would be to encourage use of underutilized timber species and to promote industry modernization and network formation.

Stakeholders (Combined Responses for Wood Products Manufacturers, Policymakers, Forest Managers, and University Officials)

In order to present research findings across the four stakeholder populations, consolidated illustrations were generated allowing each stakeholder group to be evaluated and be compared to other stakeholder groups. The four stakeholder groups are wood products manufacturers (also referred to as 'manufacturers' in this section), policymakers, forest managers and university officials. Differences between groups were statistically analyzed using one way analysis of variance (ANOVA). Differences at an alpha level of 0.05 are identified in each figure.

Forest Industry Development

A set of questions were asked that deal with forest industry development. Respondents were asked to evaluate the relative importance of forest industry development elements in Côte d'Ivoire. As seen in figure 42, there is a wide range of mean ratings between the four stakeholder groups. The scale used was 1=very unimportant to 5=very important on a five point scale. When "attracting new primary industry" was evaluated, wood product manufacturers had the lowest mean rating of 1.4 among the stakeholder groups, followed by policymakers (1.9), forest managers

(2.4) and university officials (3.1). There is a statistically significant difference among the responses of the four stakeholder groups. However, this effect was not found to be important overall with a weighted mean of 2.1. This low weighted average rating could possibly be explained by the fact that Côte d'Ivoire has already lost 83 percent of its 16 million hectares (39.5 million acres) of forestland; therefore it would not be rational to attract new primary industry since the existing industry will experience perhaps timber supply in the near future if the forestland is not sustained.

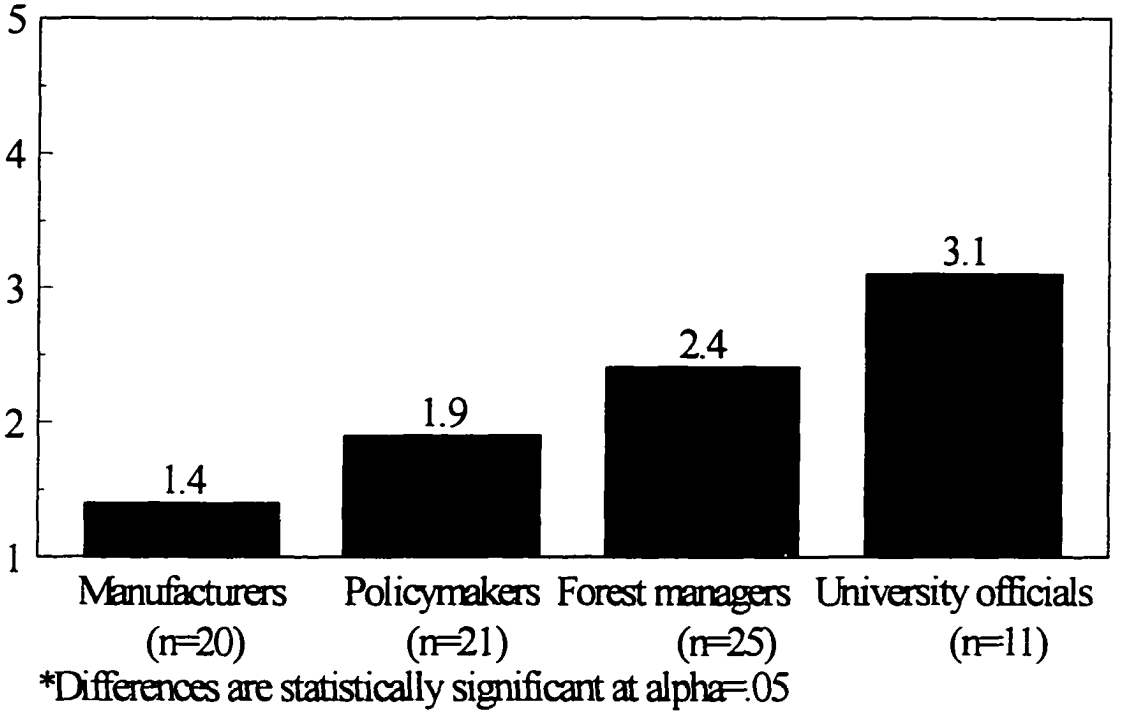


Figure 42. Manufacturers, Policymakers, Forest Managers and University Officials
Importance of Attracting New Primary Industry in Côte d'Ivoire
Scale: 1=very unimportant to 5=very important

"Attracting new value-added forest industry", had a weighted average rating of 3.7. There is no statistically significant difference among stakeholder groups (Figure 43). All the stakeholder groups believe that attracting new value-added industry was

found to be important for establishing successful forest industry development programs. However university officials means rating of 4.1 was found to be the highest. Thus university officials believe that attracting new value-added forest industry was important for forest industry development in Côte d'Ivoire.

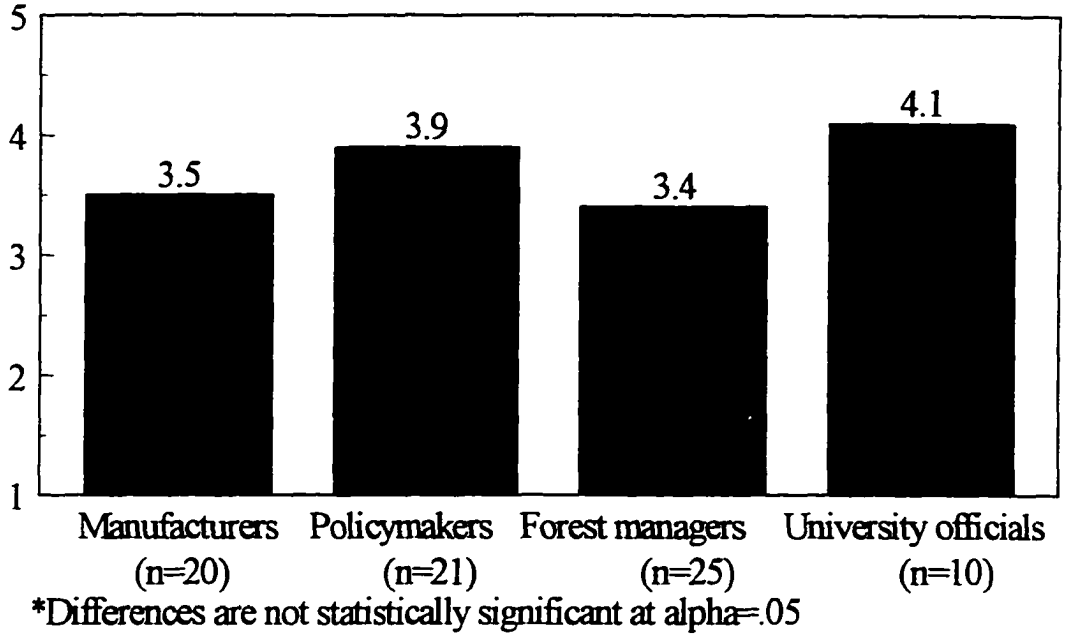


Figure 43. Manufacturers, Policymakers, Forest Managers and University Officials
Importance of Attracting Value-Added Industry in Côte d'Ivoire
Scale: 1=very unimportant to 5=very important

"Increase employment in the forest industry", university officials had the highest mean rating of 4.6 and forest managers had the lowest mean rating of 3.4 (Figure 44). There is a statistically significant difference among the responses of the four stakeholder groups. Overall, this was found to be important with a weighted average rating of 4.1. For some reason university officials found that increasing employment in the forest industry was important due to the fact that in Côte d'Ivoire,

the employment rate is in two-digit number. Employment available in the industry could help economically and socially.

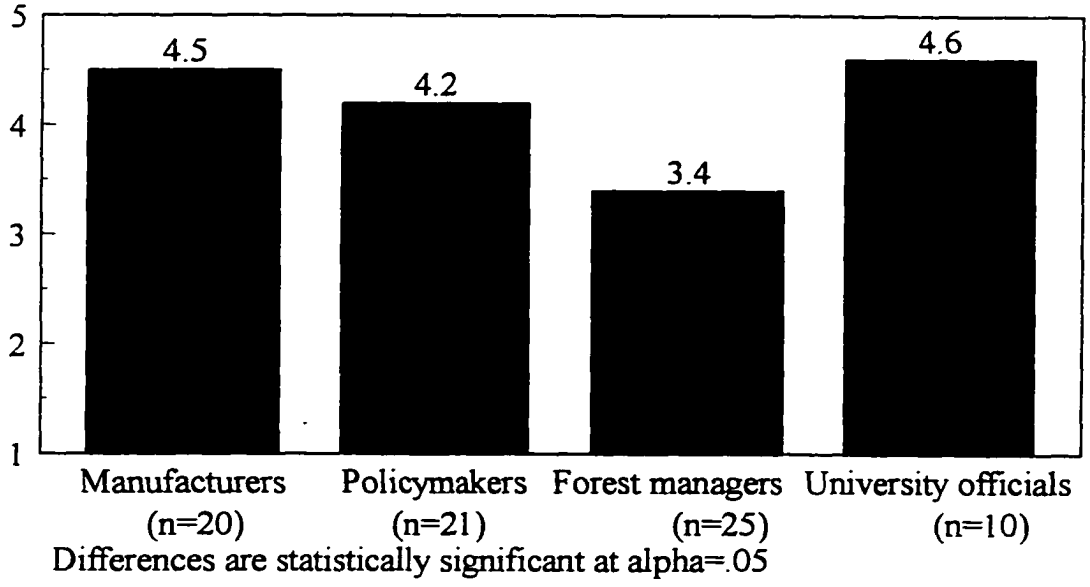


Figure 44. Manufacturers, Policymakers, Forest Managers and University Officials
Importance of Increasing the Employment in Forest Industry in Côte d'Ivoire
Scale: 1=very unimportant to 5= very important

Figure 45 shows the responses regarding the statement "increase market share of Côte d'Ivoire forest products in the world market" among the four stakeholder groups. Wood products manufacturers had the highest mean rating of 4.3 and forest managers had the lowest mean rating of 2.9. There is a statistically significant difference among the responses of the four stakeholder groups. Overall, this was found to be important with an overall weighted mean of 3.6. Wood products manufacturers and forest managers have wide perception gap when evaluating this statement. This is happening because both stakeholder groups have different objectives in forest resources utilization and management in Côte d'Ivoire. While wood products manufacturers

believe in market growth to increase their profit margin, forest managers believe in forest resource conservation.

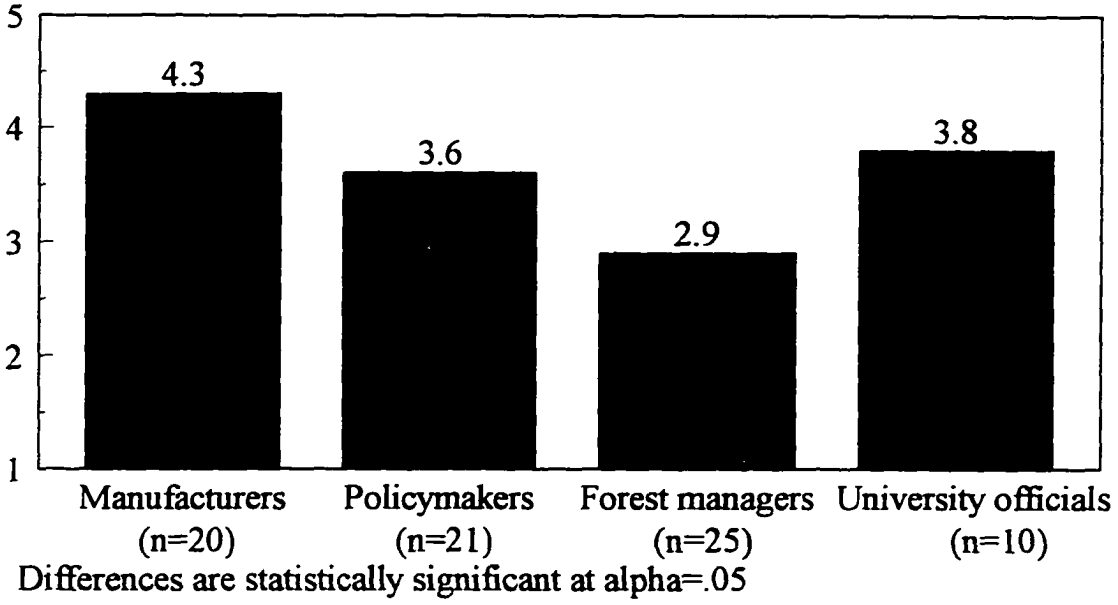


Figure 45. Manufacturers, Policymakers, Forest Managers and University Officials
Importance of Increasing Market Share of Côte d'Ivoire in World Market
Scale: 1=very unimportant to 5=very important

Figure 46 shows the responses related to the statement " encourage use of underutilized timber species". There are no statistically significant differences in the mean ratings of respondents among the four stakeholder groups. All stakeholder groups believe that the use of underutilized timber species should be encouraged in establishing successful forest industry development programs with a weighted mean of 4.6. However on the individual stakeholder group, wood products manufacturers had the highest mean rating of 4.9 on the five-point scale where 1=very unimportant to 5=very important. Somewhat wood products manufacturers believe in preventing future timber supply. On the other hand, university officials had the lowest mean rating of 4.0. Even

though university officials mean rating was still high they did not fully believe that it is was very important to encourage use of underutilized timber species in Côte d'Ivoire.

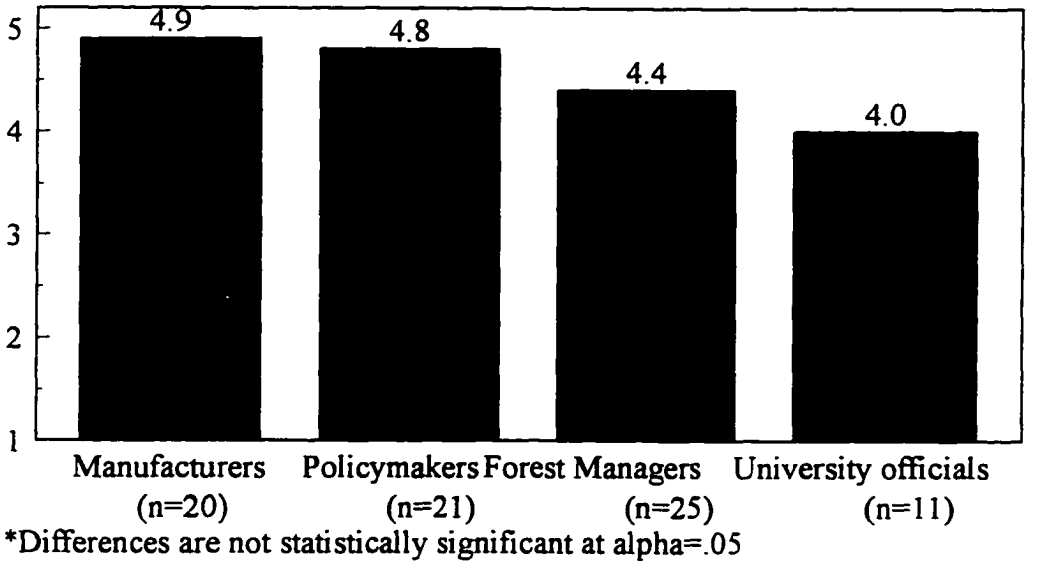


Figure 46. Manufacturers, Policymakers, Forest Managers and University Officials Importance of Encouraging Use of Underutilized Timber Species in Côte d'Ivoire Scale: 1=very unimportant to 5=very important

With the statement "promote forestry education, technology transfer and technical assistance", respondents among the four stakeholder groups had a weighted mean rating of 4.7 and was found to be important. This result means that there is no statistically significant difference in the means of responses among the four stakeholder groups (Figure 47). All stakeholder groups agree that forest education, technology transfer and technical assistance should be promoted in establishing forest industry development programs in Côte d'Ivoire. However on the individual stakeholder group levels, both policymakers and forest managers had each a mean rating of 4.8 on the

five-point scale. Meaning that both stakeholder groups highly value forestry education, technology transfer and technical assistance among all the other stakeholder groups.

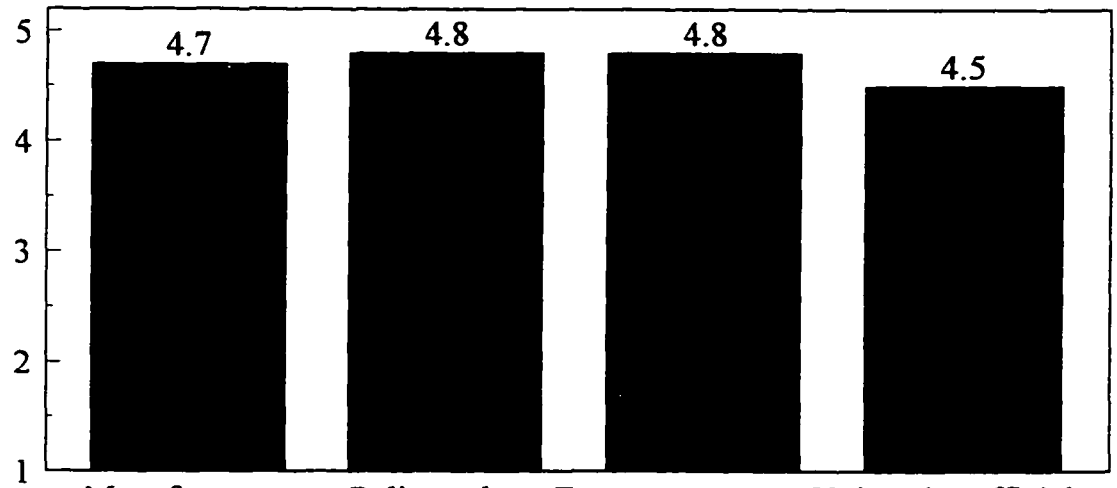


Figure 47. Manufacturers, Policymakers, Forest Managers and University Officials Importance of Promoting Forestry Education, Technology Transfer and Technical Assistance Scale: 1=very unimportant to 5= very important

When the respondents were asked to evaluate the statement "guarantee future timber supply", the weighted mean rating was 4.7. ANOVA results show that there is no statistically significant difference in responses among the four stakeholder groups. All respondent groups believed that guaranteeing future timber supply was fundamental in establishing successful forest industry development programs in Côte d'Ivoire (Figure 48). With a current deforestation rate of 7 percent, the largest in the world, forests in Côte d'Ivoire which are already much diminished (2.6 million hectares remaining from 16 million hectares) would disappear within 20 years if a solution is not found. Facing this alarming situation, stakeholders believe that it would be necessary

and crucial to have forest development programs that will encourage guaranteeing future timber supply. This idea is commonly expressed by stakeholders in Côte d'Ivoire. Stakeholders suggest that timber supply would be guaranteed if forest development programs encouraging popular reforestation are establish.

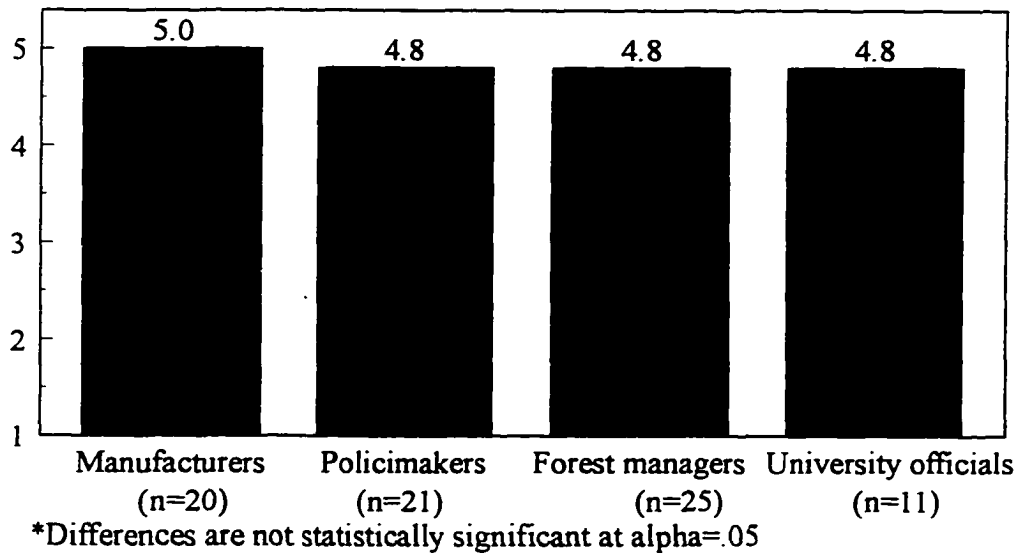


Figure 48. Manufacturers, Policymakers, Forest Managers and University Officials Importance of Guaranteeing Future Timber Supply in Côte d'Ivoire Scale: 1=very unimportant to 5= very important

With the statement "support rural economic development", responses among the four stakeholder groups had a weighted mean rating of 4.5. Thus, there is no statistically significant difference of responses among the four stakeholder groups. As a result, all stakeholder groups believe that supporting rural economic development is essential for successful forest industry development programs in Côte d'Ivoire (Figure 49). Stakeholders believe in rural economic development because that way some indigenous people would have another alternative outside the agricultural sector to make living. As a result, less people would have to cultivate the land and then land use pressures would diminish.

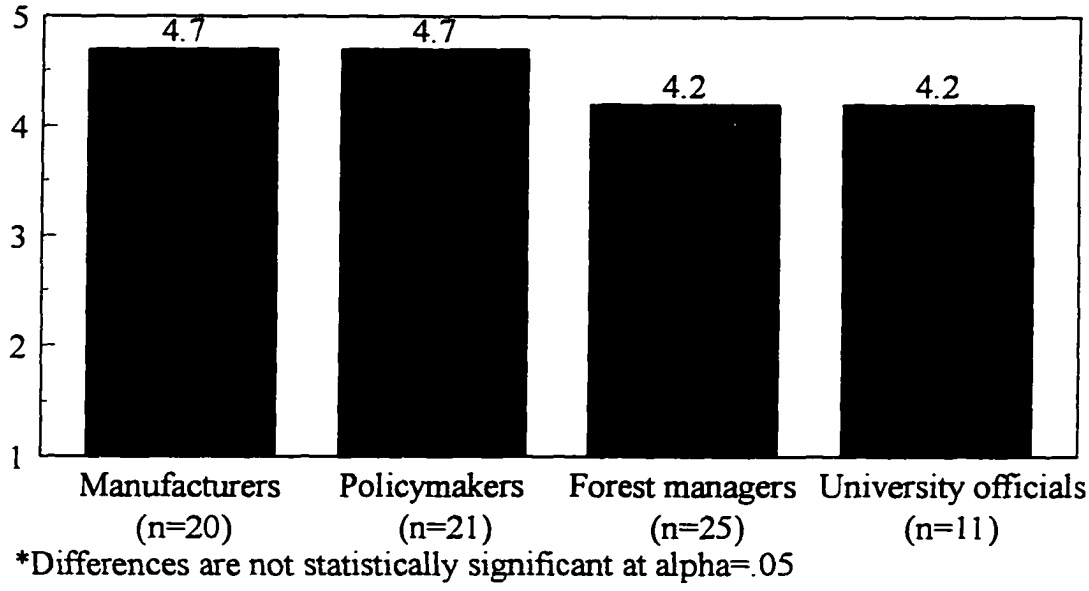


Figure 49. Manufacturers, Policymakers, Forest Managers and University Officials Importance of Supporting Rural Economic Development in Côte d'Ivoire Scale: 1=very unimportant to 5=very important

Figure 50 shows the information regarding the statement "increase export opportunities in the wood industry". Wood products manufacturers had the highest mean rating of 4.6 and forest managers had the lowest mean rating of 2.2. There is a statistically significant difference among the four groups on this statement. Overall, this was not found to be important with a weighted mean of 2.1. Stakeholders believe that timber supply is nearly lacking therefore it is not necessary at least for now to increase the export opportunities in the wood industry. However, when evaluating the individual stakeholder group, only wood products manufacturers believe that increasing export opportunities in the wood industry was unconditionally important. Their opinion can be well understand since their in business to gain profit. So any criteria that would help their them to achieve their goal would always be important to them. On the other hand, both policymakers and forest managers believe that increasing

export opportunities in the wood industry is not important at least for now. Policymakers and forest managers share the same interest s to achieve sustainable forest resources utilization and management. While wood products manufacturers believe in short-term benefits, policymakers and forest managers think of long-term gain.

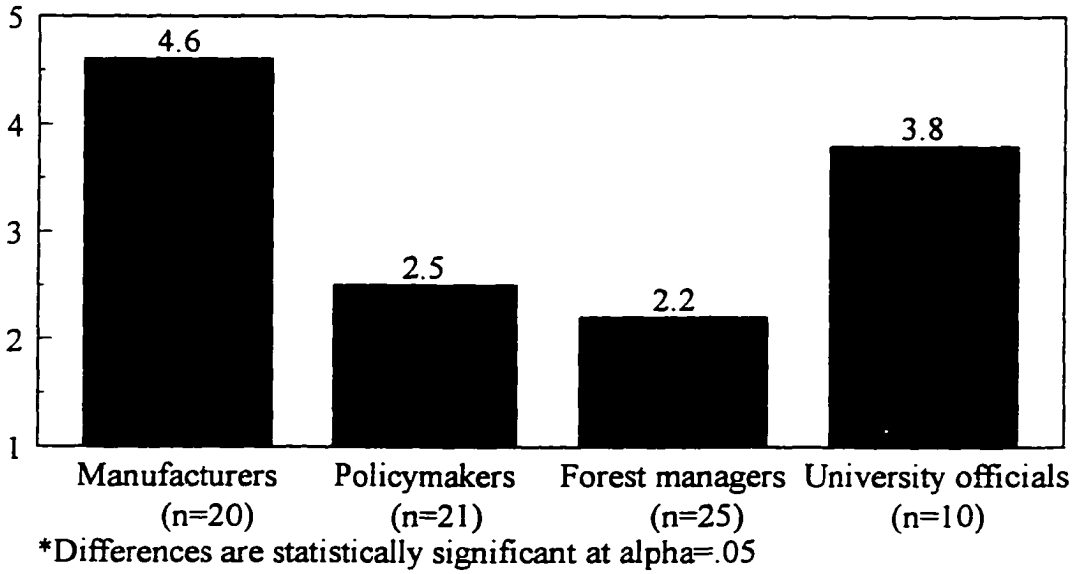


Figure 50. Manufacturers, Policymakers, Forest Managers and University Officials Importance of Increasing Export Opportunities in the Wood Industry in Côte d'Ivoire Scale: 1=very unimportant to 5=very important

Figure 51 shows the information regarding he statement "industry modernization", responses among the four stakeholder groups. Policymakers had the highest mean rating of 5.0 and university officials had the lowest mean rating of 4.3. The differences among these groups were statistically significant. Overall, this was found to be important with a weighted mean of 4.7. Stakeholders believe that industry modernization would help to deal with the deforestation issues in Côte d'Ivoire. For example, with the industry modernization, logs recovery rate can be improved and logs waste be minimized. Faster growing tree species can be encouraged and promoted and

juvenile trees can used for wood processing. All these practices would encourage forest conservation develop plantation forest industry in Côte d'Ivoire.

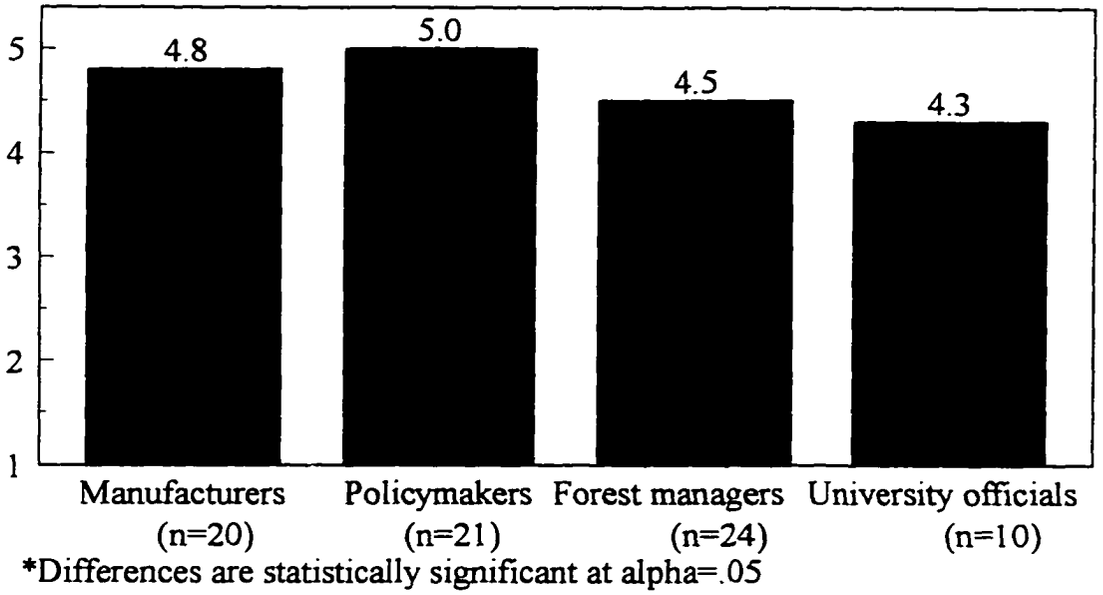


Figure 51. Manufacturers, Policymakers, Forest Managers and University Officials Importance of Encouraging Wood Products Industry Modernization in Côte d'Ivoire Scale: 1=very unimportant to 5=very important

Data in Figure 52 show the responses of each stakeholder group as it refers to the statement "promote network formation". Policymakers had the highest mean rating of 4.9 and university officials had the lowest mean rating of 4.1. The mean differences among the groups were statistically significant. Overall, this was found to be important with a weighted mean of 4.7. This result confirm the high desire of stakeholder groups to communicate and interact effectively between each individual group. In that way, the sustainable forest resource utilization and management activities would be promoted in forest industry in Côte d'Ivoire. As a result, there will be enough timber supply for current and future generation.

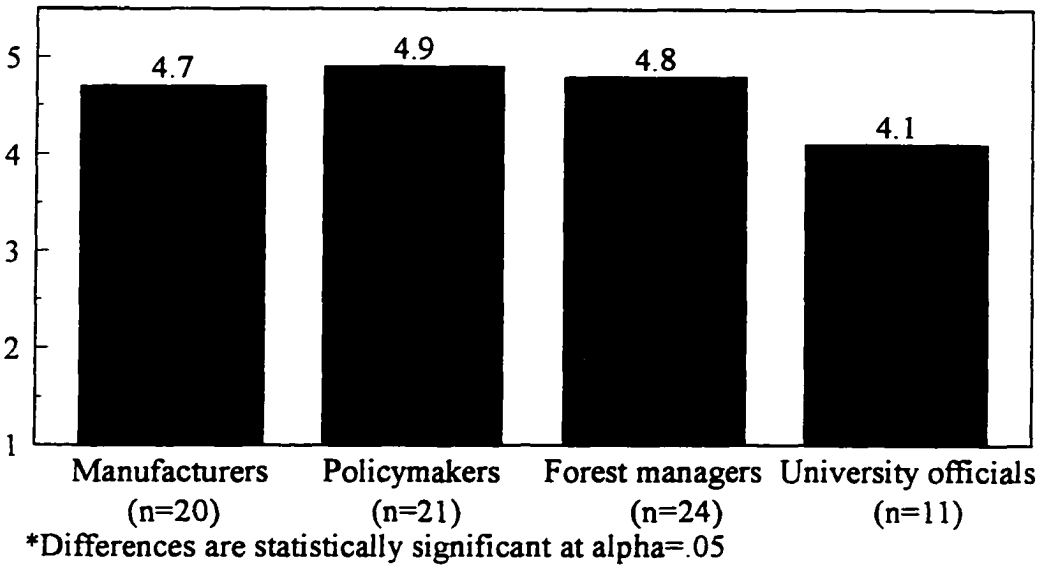


Figure 52. Manufacturers, Policymakers, Forest Managers and University Officials Importance of Promoting Network Formation in Côte d'Ivoire Scale: 1=very unimportant to 5=very important

With the statement "promote entrepreneurship", responses among the four stakeholder groups had a weighted mean rating of 4.5. There is no statistically significant mean difference among the four stakeholder groups (Figure 53). All the stakeholder groups agree that promoting entrepreneurship is important for establishing sustainable forest industry development programs in Côte d'Ivoire. When observing the mean rating of the individual stakeholder groups, policymakers had the highest mean rating of 4.8. It is important to recall that five-point scale was used where 1=very unimportant to 5=very important. Thus, policymakers believe that it very important to promote entrepreneurship in forest industry in Côte d'Ivoire to encourage forest industry development. However, forest managers who share the same interests of sustainable forest resources utilization and management had this time the lowest mean

rating of 4.1. Both forest managers and policymakers believe in promoting entrepreneurship in the wood industry in Côte d'Ivoire.

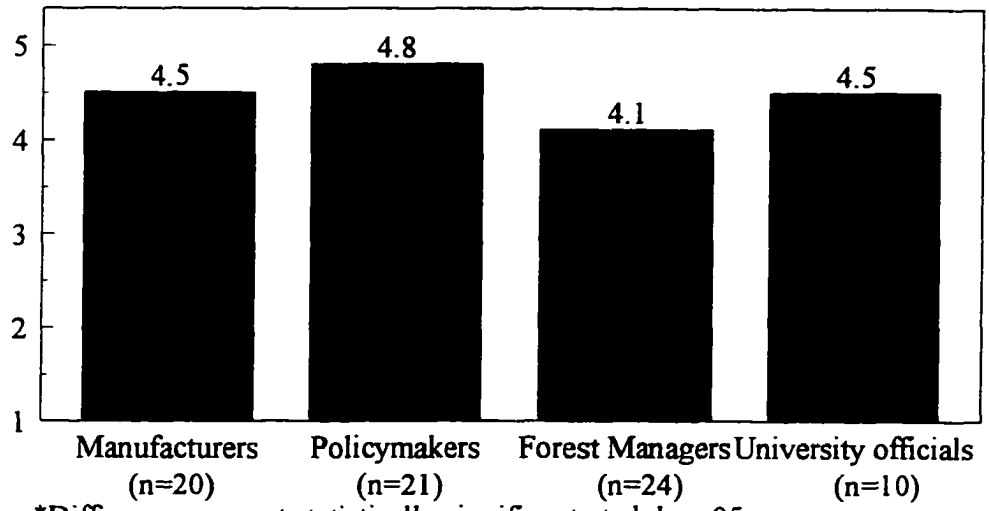


Figure 53. Manufacturers, Policymakers, Forest Managers and University Officials
Importance of Promoting Entrepreneurship in the Wood industry in Côte d'Ivoire
Scale: 1=very unimportant to 5=very important

Forest Development Programs

Next, a set of questions were asked to determine the role that certain factors play in establishing sustainable forest management programs. Questions were asked regarding strong government leadership, national economic conditions, program funding, resource considerations and global forest products demand.

Strong Government Leadership

Across respondent stakeholder groups, there is a statistically significant difference of mean responses with regard to the existence of strong government leadership in establishing sustainable forest management programs. Policymakers and wood products manufacturers had mean ratings of 4.6 and 4.1, respectively. This

indicates that they believe that a strong government leadership plays an important role in establishing successful forest management programs. University officials, with a mean rating of 2.8, believe that government leadership plays an unimportant role in establishing such successful programs in Côte d'Ivoire (Figure 54). Overall, this was found to important with a weighted mean rating of 3.9.

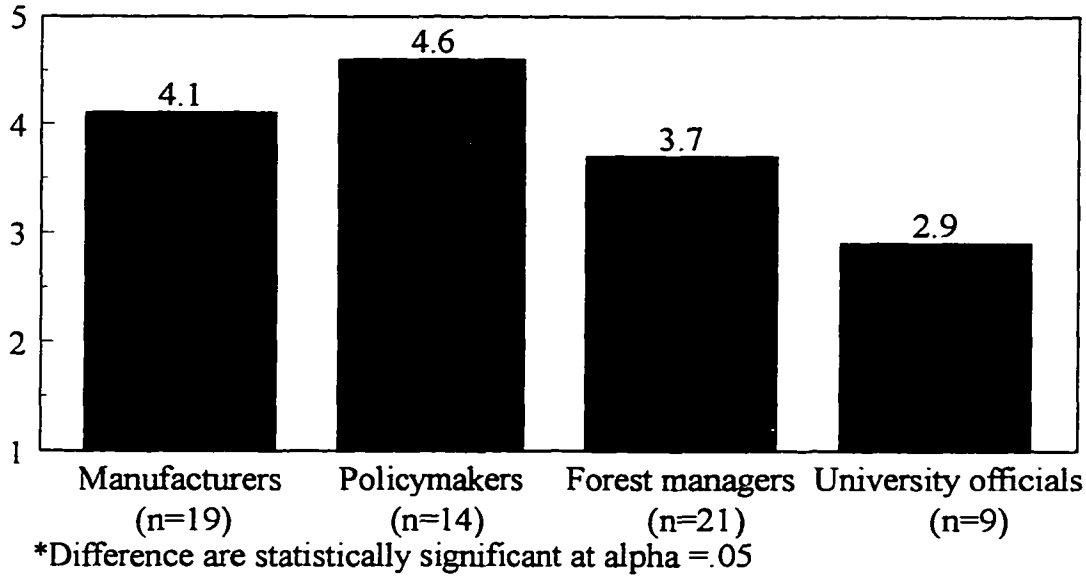


Figure 54. Manufacturers, Policymakers, Forest Managers and University Officials Importance of Government Strong Leadership in Establishing Forest Management Programs in Côte d'Ivoire Scale: 1=very unimportant to 5=very important

International Development Agency Cooperation

There is no statistically significant difference among stakeholder groups with regard to the intervention of the international development agencies. All stakeholder groups believe that international development agency cooperation plays an important role in establishing successful forest management programs in Côte d'Ivoire with a weighted mean rating of 4.3 (Figure 55). However, at the individual stakeholder group

levels, university officials with a highest mean rating of 5.0, had high confidence in the International Development Agencies than in the government leadership.

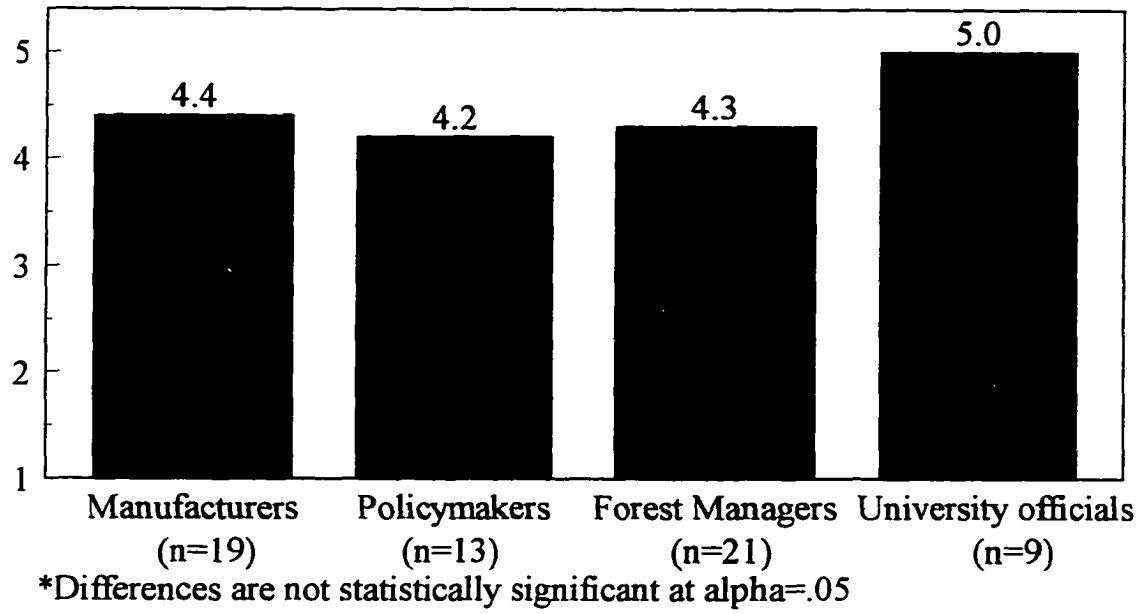


Figure 55. Manufacturers, Policymakers, Forest Managers and University Officials Importance of International Development Agency Cooperation in Forest Management Programs in Côte d'Ivoire Scale: 1=very unimportant to 5=very important

National Economic Conditions

Across respondent stakeholder groups, there is no statistically significant difference of mean ratings with regard to the fact that national economic conditions play an important role in establishing sustainable forest management programs. With a weighted mean rating of 4.5, all stakeholder groups believe that national economic conditions are key in establishing successful forest utilization and management programs in Côte d'Ivoire (Figure 56). Wood products manufacturers had the highest mean rating of 4.7. They highly believe that the national economic conditions are very

important in establishing sustainable forest resources utilization and management practices in Côte d'Ivoire.

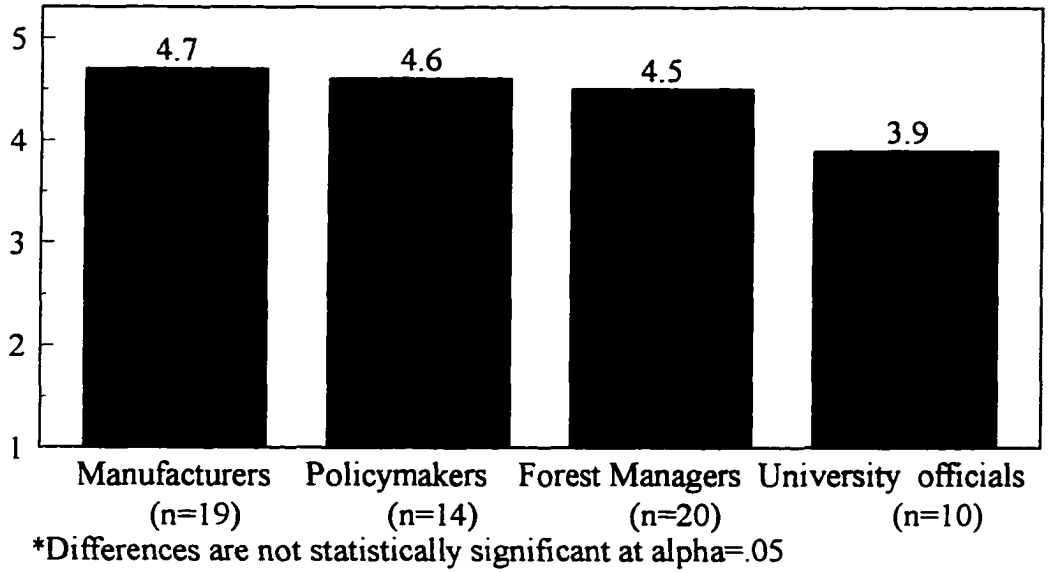
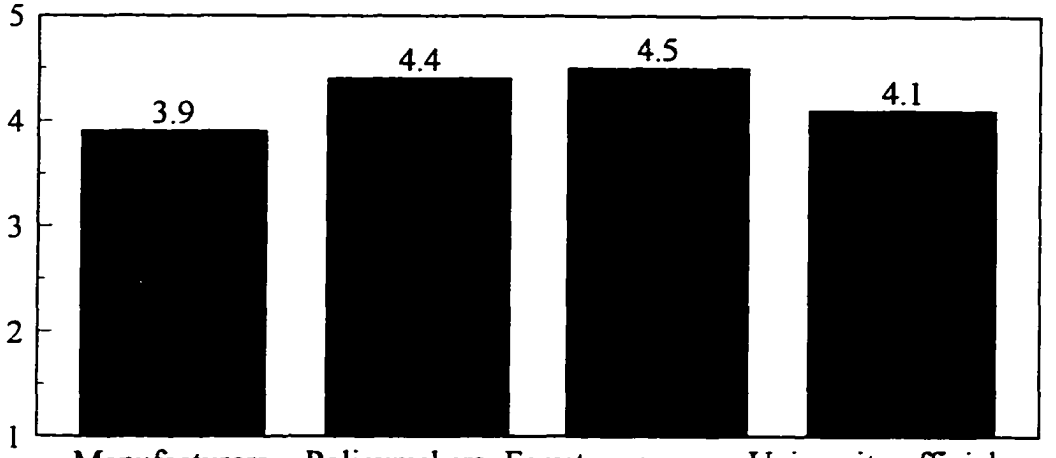


Figure 56. Manufacturers, Policymakers, Forest Managers and University Officials Importance of National Economic Conditions in Establishing Forest Management Programs in Côte d'Ivoire Scale: 1=very unimportant to 5=very important

Adequate Funding

When respondents were asked to evaluate the statement "adequate funding", the weighted mean rating was 4.2. There is no statistically significant difference in the mean responses of the four stakeholder groups. All the respondent groups believe that it is fundamental to have adequate funding in establishing successful forest utilization and management programs in Côte d'Ivoire (Figure 57). Wood products manufacturers had the lowest mean rating of 3.9. They believe that adequate funding was not very important to establish successful forest resources utilization and management in Côte d'Ivoire.



*Differences are not statistically significant at alpha=.05

Figure 57. Manufacturers, Policymakers, Forest Managers and University Officials Importance of Adequate Funding in Establishing Forest Management Programs in Côte d'Ivoire Scale: 1=very unimportant to 5=very important

Forest Resource Considerations

There is no statistically significant difference among the mean responses of the four stakeholder groups with regard to the fact that "forest resource considerations" have an important role in establishing successful forest utilization and management programs in Côte d'Ivoire. With a weighted mean of 4.6, all the respondent groups believe that forest resource considerations are an important factor in establishing sustainable forest utilization and management programs (Figure 58). At the individual stakeholder group levels, policymakers and forest managers had each the highest mean rating of 4.8. They strongly believe that forest resource considerations was very important to establish successful forest utilization and management programs in Côte d'Ivoire than any other stakeholder groups.

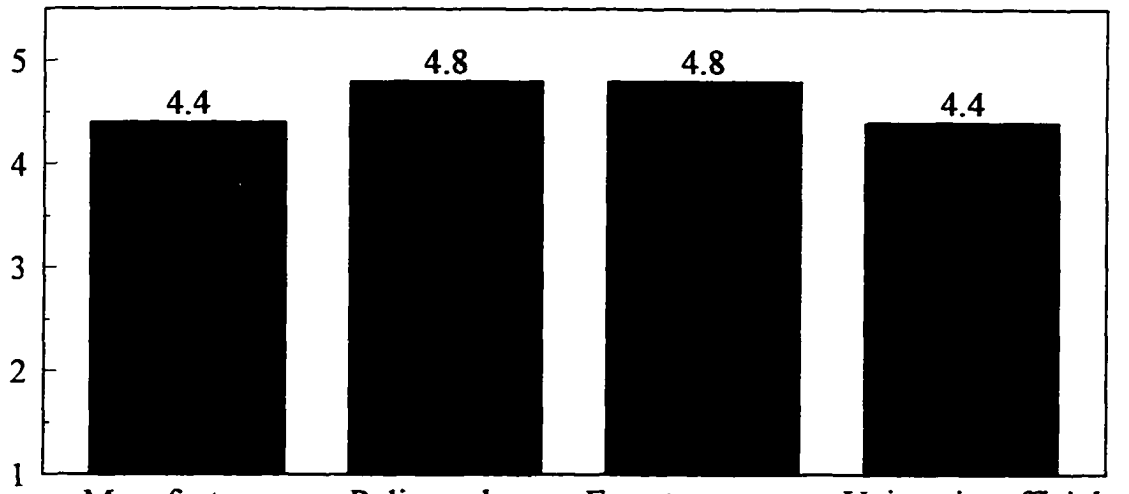


Figure 58. Manufacturers, Policymakers, Forest Managers and University Officials Importance of Forest Resource Considerations in Establishing Forest Management Programs in Côte d'Ivoire Scale: 1=very unimportant to 5=very important

Global Forest Products Demand

When respondents were asked to evaluate the statement "global forest products demand", the weighted mean rating was 4.2. There is no statistically significant mean difference among the responses of the stakeholder groups. All the respondent groups believe that there is a direct correlation between global forest products demand and establishing sustainable forest utilization and management programs in Côte d'Ivoire (Figure 59). However, at the individual level policymakers had the highest rating of 4.9. They highly believe that global forest products demand was important to establish sustainable forest resources utilization and management programs than any other stakeholder groups. University officials with a lowest mean rating of 4.1, was the only

group that believed less in global forest products demand to establish sustainable forest resources utilization and management programs.

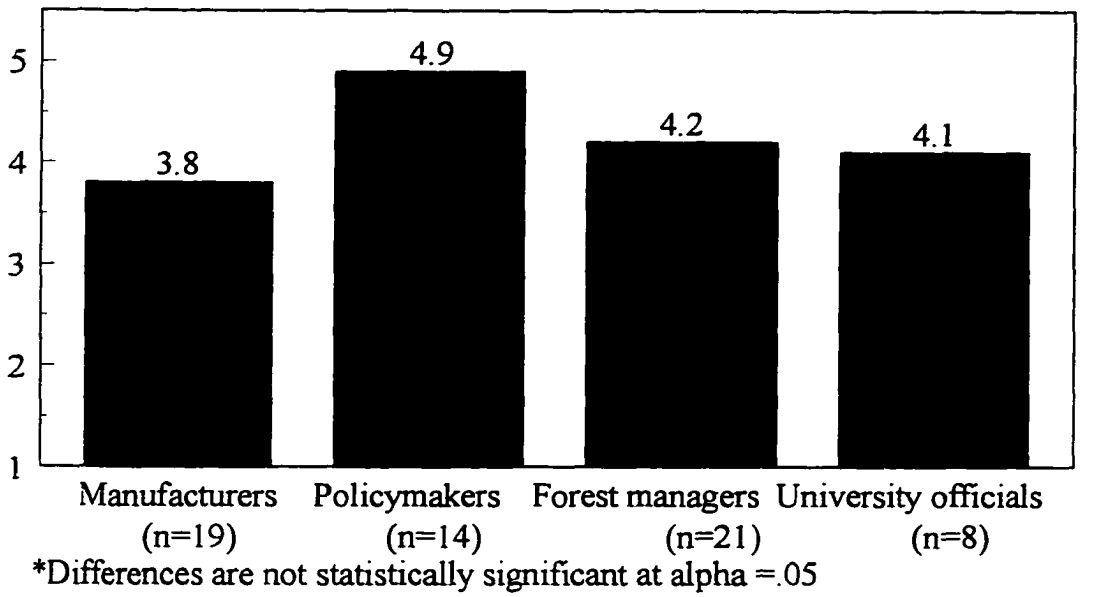


Figure 59. Manufacturers, Policymakers, Forest Managers and University Officials Importance of Global Forest Products Demand in Establishing Forest Management Programs in Côte d'Ivoire Scale: 1=very unimportant to 5=very important

Summary

Forest Industry Development

Twelve variables were evaluated on a five point scale (where 1=very unimportant to 5=very important). Ten variables were found to be important and among them four were highly evaluated with a weighted mean ranking of 4.7 each. These variables are as follows:

1. Guarantee future timber supply
2. Promote industry modernization
3. Promote network formation

4. Promote forestry education, technology transfer and technical assistance

"Encourage use of underutilized timber" with a weighted mean ranking of 4.6 was the fifth highly ranked variable. Only two variables such as "attracting new primary industry" and "increase export opportunities in wood industry" were poorly evaluated (with a weighted mean of 2.1 each) by the respondents.

Forest Development Programs

Respondents evaluated six forest development programs. It was found that all six programs were important with weighted means ranging from 3.9 to 4.6. Forest resource considerations and national economic conditions were highly evaluated with weighted mean ratings of 4.6 and 4.5, respectively.

References

Ministere de l'Economie et de Finance. 1996. Direction Generale des Statistiques. Abidjan, Côte d'Ivoire.

Laarman, Jan G. and Roger A. Sedjo. 1992. Global Forests: Issues for Six Billion People. McGraw-Hill, Inc., New York, New York.

National Trade Data Bank. 1996. USDA, Foreign Agricultural Service. Agworld Attache Reports. Ag Agwrld IV 5028.

CHAPTER 6

TESTS OF HYPOTHESES RELATED TO COMMUNICATION LINKS AMONG STAKEHOLDERS

Introduction

This chapter identifies the perception gaps of communication involving all five stakeholder groups. t-tests of ten pairs of hypotheses were conducted to determine the significance/non-significance of each statement (Table 57). To perform the analyses, a mean was set at μ=3.0. Based on a five point Likert scale used in collecting the data, 3.0 was established as a neutral point from which "high" and "low" levels of communication were compared. A high level of communication implies that there was frequent interaction between the stakeholder groups involved, and that this communication was satisfactory to the parties involved in the process. A low level of communication refers to poor and infrequent communication between the groups involved.

Hypotheses

To review, hypotheses that were tested to understand the perception gaps that exited among the five stakeholder groups are repeated below.

Communication Between Policymakers and University Officials

From policymakers viewpoint:

H1a: There is a high level of communication between policymakers and university officials.

From university officials viewpoint:

H1b: There is a high level of communication between university officials and policymakers.

Communication Between Policymakers and Indigenous People

From policymakers viewpoint:

H2a: There is a high level of communication between policymakers and indigenous people.

From indigenous people viewpoint:

H2b: There is a high level of communication between indigenous people and policymakers.

Communication Between Policymakers and Forest Managers

From policymakers viewpoint:

H3a: There is a low level of communication between policymakers and forest managers.

From forest managers viewpoint:

H3b: There is a low level of communication between forest managers and policymakers.

Communication Between Policymakers and Wood Products Manufacturers

From policymakers viewpoint:

H4a: There is a low level of communication between policymakers and wood products manufacturers.

From wood products manufacturers viewpoint:

H4b: There is a low level of communication between wood products manufacturers and policymakers.

Communication Between Forest Managers and Indigenous People

From forest managers view point:

H5a: There is a low level of communication between forest managers and indigenous people.

From indigenous people viewpoint:

H5b: There is a high level of communication between indigenous people and forest managers.

Communication Between Forest Managers and Wood Products Manufacturers

From forest managers viewpoint:

H6a: There is a low level of communication between forest managers and wood products manufacturers.

From wood products manufacturers viewpoint:

H6b: There is a low level of communication between wood products manufacturers and forest managers.

Communication Between Forest Managers and University Officials

From forest managers viewpoint:
H7a: There is a low level of communication between forest managers and university officials.

From university officials viewpoint:

H7b: There is a high level of communication between university officials and forest managers.

Communication Between Indigenous People and Wood Products Manufacturers

From indigenous people viewpoint:

H8a: There is a low level of communication between indigenous people and wood products manufacturers.

From wood products manufacturers viewpoint:

H8b: There is a low level of communication between wood products manufacturers and indigenous people.

Communication Between Indigenous People and University Officials

From indigenous people viewpoint:

H9a: There is a high level of communication between indigenous people and university officials.
From university officials viewpoint:

H9b: There is high level of communication between university officials and indigenous people.

Communication Between Wood Products Manufacturers and University Officials

From wood products manufacturers viewpoint:

H10a: There is a high level of communication between wood products manufacturers and university officials.

From university officials viewpoint:

H10b: There is a high level of communication between university officials and wood products manufacturers.

Twenty hypotheses were formulated and none of them was statistically significant and directionally as hypothesized. These hypotheses were essentially formulated based on secondary research information reviewed prior to the field work.

The statistic techniques used to test the hypotheses were solely based on one-sided t-test and one way-analysis of variance. These two techniques were the most appropriate or adapted statistical techniques for this study. The techniques used were justified because of the small sample frame of 103 people interviewed. However, this sample frame was representative for the study. Côte d'Ivoire comprises about 7 regions and more than 15 cities selected within these regions were used to conduct the interviews.

Côte d'Ivoire has only one university with small university branches represented in different regions. Twenty-five professors and forestry administrators were contacted but only 13 volunteered to grant the interview. Because of the small unit that university represents among the stakeholder groups, the 13 professors and administrators may well be representative in this study. There were sufficient respondents in the other groups.

Table 57: Summary of Tests of Hypotheses

Hypothesis	From Groups Point of View	Regarding Communication With This Group	Hypothesized Communication < 3.0=low >3.0=high	Actual Level of Communication	Mean	SD	t-value	p-value
H1a	Policymakers	University Officials	High	Low	2.0	1.5	-3.0	0.003
H1b	University Officials	Policymakers	High	Low	1.3	0.8	-7.4	0.000
H2a	Policymakers	Indigenous People	High	High	3.5	1.3	1.6	0.940
H2b	Indigenous People	Policymakers	High	Low	1.1	0.6	-15.0	0.000
H3a	Policymakers	Forest Managers	Low	High	4.0	1.3	3.7	0.001
H3b	Forest Managers	Policymakers	Low	High	4.2	1.5	3.9	0.000
H4a	Policymakers	Wood Products Manufacturers	Low	High	3.7	1.5	2.2	0.022
H4b	Wood Products Manufacturers	Policymakers	Low	High	3.5	1.2	1.8	0.048
H5a	Forest Managers	Indigenous People	Low	High	3.4	1.5	1.5	0.078
H5b	Indigenous People	Forest Managers	High	Low	1.1	0.4	-20.5	0.000
H6a	Forest Managers	Wood Products Manufacturers	Low	Low	2.4	1.5	-2.2	0.980
H6b	Wood Products Manufacturers	Forest Managers	Low	High	3.4	1.2	12.1	0.100
H7a	Forest Managers	University Officials	Low	Low	2.8	1.7	-0.6	0.720
H7b	University Officials	Forest Managers	High	Low	1.6	0.8	-5.3	0.000
H8a	Indigenous People	Wood Products Manufacturers	Low	Low	1.2	0.5	-17.3	1.000
H8b	Wood Products Manufacturers	Indigenous People	Low	High	4.2	0.8	6.1	0.000
H9a	Indigenous People	University Officials	High	Low	1.0	0.2	-47.0	0.000
H9b	University Officials	Indigenous People	High	Low	1.7	1.3	-3.1	0.007
H10a	Wood Products Manufacturers	University Officials	High	Low	1.6	1.0	-5. 6	0.000
H10b	University Officials	Wood Products Manufacturers	High	Low	1.2	0.4	-14.9	0.000

Tests of Hypotheses

H1a: **From the point of view of policymakers**, there was a high level of communication between policymakers and university officials. Values reported from the analysis were as follows:

- mean=2.0
- standard deviation (SD)=1.5
- t-value=-3.0
- p-value=0.003

The p-value of 0.003 shows that the hypothesis (H1a) was statistically significant(at α=0.05 level) but not directionally as hypothesized, indicating that there was a low level of communication between university officials and policymakers from the point of view of policymakers.

H1b: **From the point of view of university officials**, there was a high level of communication between university officials and policymakers. Values revealed from the analysis were as follows:

- mean=1.3
- standard deviation (SD)=0.8
- t-value=-7.4
- p-value=0.000

The p-value of 0.000 shows that the hypothesis (H1b) was statistically highly significant (at α=0.05 level) but not directionally as hypothesized. This showed that from the point of view of the university officials, there was a low level of communication between them and the policymakers.

Additional t-tests were done to confirm if there were significant perception gaps related to communication between pairs of stakeholders. A statistically significant perception gap (0.7 on a five point scale, t=1.67, p=0.11) was not found to exist

between policymakers and university officials. Both policymakers and university officials believe that the communication link between each other was low (Figure 60).

Policymakers and university officials do not share a common interest in forest development programs. For example, in Côte d'Ivoire, the university does not offer a program in forestry. Therefore, there are no research programs at university level that affect forest policies. As a result, forest policymakers do not find it very important to establish a high communication link between themselves and university officials.

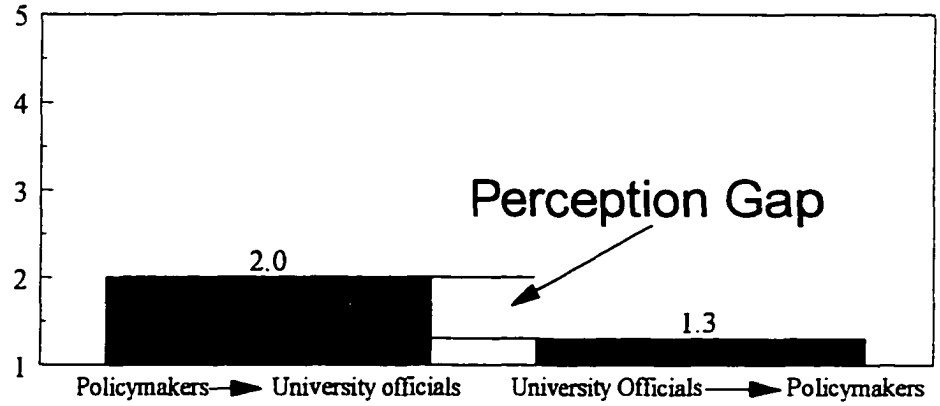


Figure 60. Perception Gap of Current Communication Between Policymakers and University Officials
Scale: 1=very low to 5=very high

H2a: **From the point of view of policymakers**, there was a high level of communication between them and the indigenous people. Statistics indicated by the analysis were as follows:

- mean=3.5
- standard deviation=1.3
- t-value=1.6
- p-value=0.94

The p-value of 0.94 shows that the hypothesis (H2a) was statistically non-significant (at α=0.05 level) but directionally as hypothesized, confirming that there

was a high level of communication between both policymakers and indigenous people from the policymakers' point of view.

H2b: **From the point of view of the indigenous people**, there was a high level of communication between them and the policymakers. The following statistics were obtained:

- mean=1.1
- standard deviation=0.6
- t-value=-15.0
- p-value=0.000

The p-value of 0.000 shows that the hypothesis (H2b) was statistically significant (at α=0.05 level) but not directionally as hypothesized. This showed that from the viewpoint of the indigenous people, the communication level between them and the policymakers was low.

In addition, a t-test was conducted to confirm if there were a significant gap between the viewpoints of the policymakers and the indigenous people. It was found that the mean difference between the responses of the policymakers and the indigenous people was statistically highly significant at α=0.05 level (2.4 on a five point scale, t=7.5, p=0.000) revealing that a large gap existed in their perception of communicating with each other (Figure 61).

While the policymakers believed that their communication with the indigenous people was moderately higher than the norm (mean=3.5), the indigenous people thought that their communication with the policymakers was very low (mean=1.1). As a result, there was a considerable perception gap of communication between policymakers and indigenous people. Often, policymakers do not involve indigenous

people in their decision-making processes to assess the needs of the indigenous people; but rather, they tell the indigenous people what to do. The indigenous peoples' needs could have been assessed if they were asked to participate in the decision making processes such as the classification of forest lands and the transformation of natural forests into national parks and reserves. On one hand, policymakers, by telling indigenous people what to do, believe that they communicate somehow with the indigenous people. On the other hand, the indigenous people believe that there is a very low communication between them and the policymakers.

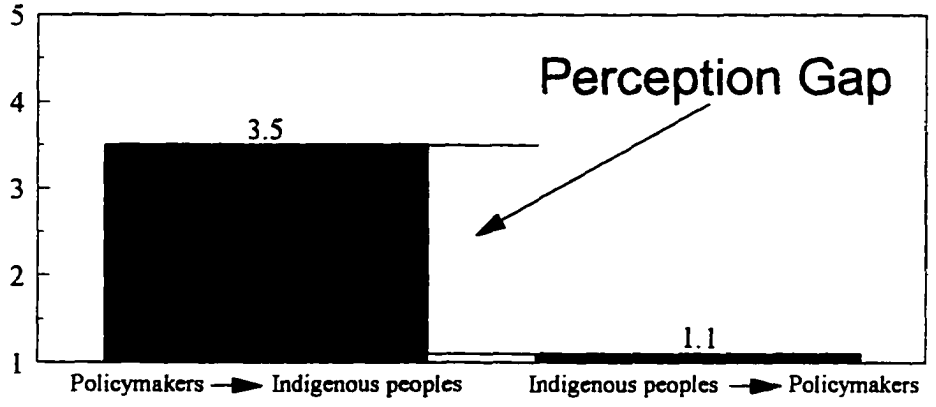


Figure 61. Perception Gap of Current Communication Between Policymakers and Indigenous People
Scale: 1=very low to 5=very high

H3a: **From the viewpoint of the policymakers**, there was weak communication between

them and the forest managers. Values reported from the analysis were:

- mean=4.0
- standard deviation=1.3
- t-value=3.7
- p-value=0.001

The p-value of 0.001 shows that the hypothesis (H3a) was statistically significant (at α=0.05 level) but not directionally as hypothesized, indicating that there was high level of communication between the policymakers and the forest managers, from the point of view of the policymakers.

H3b: **From the point of view of the forest managers**, there was low communication with the policymakers. Statistics reported from the analysis were:

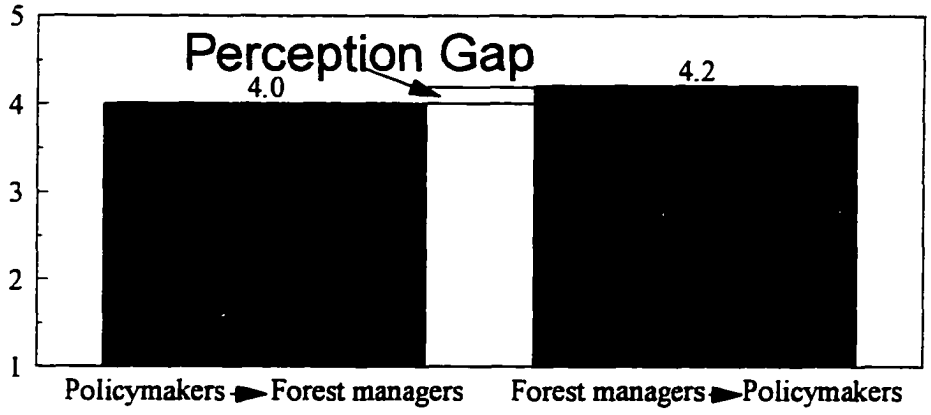
- mean=4.2
- standard deviation=1.5
- t-value=3.9
- p-value=0.000

The p-value of 0.000 shows that the hypothesis (H3b) was statistically significant (at α=0.05 level) but not directionally as hypothesized. This showed that from the point of view of the forest managers, there was a high level of communication between them and the policymakers.

Another t-test was conducted to confirm if there were a significant gap between the viewpoints of the policymakers and the forest managers. It was found that the mean difference between the responses of the policymakers and the forest managers was not statistically significant (0.2 on a five point scale, t=-0.3, p=0.78) indicating that a small gap existed in their perception of communicating with each other (Figure 62).

Both policymakers and forest managers believed that they had a high communication link. While policymakers are developing theories of forest utilization and management, forest managers apply these theories to materialize the theoretical concept already developed by the policymakers. As a result, both stakeholders are government organizations that often exchange information among themselves to reach

government forest utilization and management goals. Both policymakers and forest managers were the only stakeholder groups with high level of communication in this study. With the other stakeholder groups the communication level was either occasional or minimal.



*Differences are not statistically significant at alpha=.05

Figure 62. Perception Gap of Current Communication Between Policymakers and Forest Managers Scale: 1=very low to 5=very high

H4a: **From the point of view of the policymakers**, there was a low level of communication between them and the wood products manufacturers. Values reported from the analysis were as follows:

- mean=3.7
- standard deviation=1.5
- t-value=2.2
- p-value=0.002

The p-value of 0.002 shows that the hypothesis (H4a) was statistically significant (at α=0.05 level) but not directionally as hypothesized, indicating that there was a high level of communication between both policymakers and wood products manufacturers from the point of view of the policymakers.

H4b: **From the point of view of the wood products manufacturers,** there was a low level of communication between them and the policymakers. The following statistics were obtained:

- mean=3.5
- standard deviation=1.2
- t-value=1.8
- p-value=0.048

The p-value of 0.048 shows that the hypothesis (H4b) was statistically significant (at α=0.05 level) but not directionally as hypothesized. This showed that from the viewpoint of the wood products manufacturers, the communication level between them and the policymakers was moderate.

Additionally, a t-test was conducted to confirm if there were a significant gap between the viewpoints of the policymakers and the wood products manufacturers. It was found that the mean difference between the responses of the policymakers and the wood products manufacturers was not statistically significant (a gap of 0.2 on a five point scale, t=0.6, p=0.58), thus confirming that there was only a small gap in their perception of communicating with each other (Figure 63).

Both stakeholders believe that they had a moderate level of communicating with one another. On the one hand, the existence of moderate communication link between both stakeholders was driven by the "perimetres" allocation defined by the policymakers and acquired by the wood products manufacturers. On the other hand, timber concessions are also defined by the policymakers and procured by the wood products manufacturers in the same way as perimetres allocation. Thus, the degree of interaction between both stakeholders has defined the strength of their communication

link. Their communication link was also defined by the fact that wood products manufacturers were directly paying taxes to policymakers for the concession acquired from them. Even both agree that there was communication between them, that communication link was just occasional.

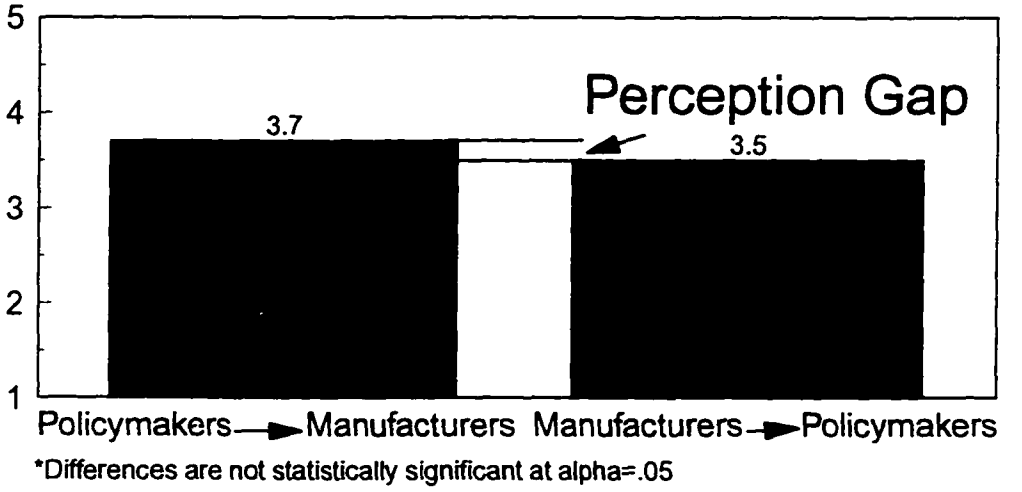


Figure 63: Perception Gap of Current Communication Between Policymakers and Wood Products Manufacturers
Scale: 1=very low to 5=very high

H5a: **From the point of view of the forest managers**, there was a low level of communication between them and the indigenous people. The statistical analysis reported the following values:

- mean=3.4
- standard deviation=1.5
- t-value=1.5
- p-value=0.078

the p-value of 0.078 reveals that the hypothesis (H5a) was statistically significant (at α=0.1 level) and not directionally as hypothesized, indicating that there was a high level of communication between the forest managers and the indigenous people, from the viewpoint of the forest managers.

H5b: **From the viewpoint of the indigenous people**, there was a high level of communication between them and the forest managers. Values reported from the analysis were as follows:

- mean=1.1
- standard deviation=0.4
- t-value=-20.5
- p-value=0.000

The p-value of 0.000 reveals that the hypothesis (H5b) was statistically highly significant (at α=0.05 level) but not directionally as hypothesized. This indicated that from the viewpoint of the indigenous people, there was a low level of communication between them and forest managers.

In addition, a t-test was conducted to confirm if there were a significant gap related to communication between forest managers and the indigenous people. It was found that the mean difference between the responses of the forest managers and the indigenous people was statistically highly significant (a gap of 2.3 on a five point scale, t=-7.4, p=0.000) indicating that a large gap existed in their perception of communicating with each other (Figure 64).

While forest managers believe that they have somewhat a communication link with the indigenous people (a mean rating of 3.4), the indigenous people reported that their communication with forest managers was very low. Forest managers seem to believe in their top-down communication practices but indigenous people disagree with them and reject such communication with forest managers. In this study it is important to report that the indigenous people group was one of the stakeholder groups that did not have a strong communication link with the other stakeholder groups. This could

have been by the fact that indigenous people are living in the farm and had the lowest level of education.

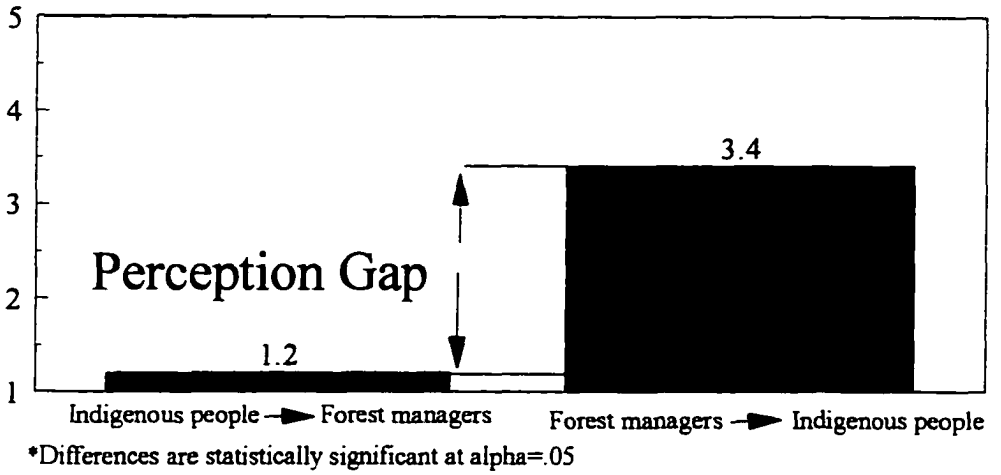


Figure 64. Perception Gap of Current Communication Between Indigenous People and Forest Managers Scale: 1=very low to 5=very high

H6a: **From the point of view of the forest managers**, there was a low level of communication between them and the wood products manufacturers. Statistics indicated by the analysis were as follows:

- mean=2.4
- standard deviation=1.5
- t-value=-2.2
- p-value=0.98

The p-value of 0.98 reveals that the hypothesis (H6a) was statistically non-significant (at α=0.05 level) but directionally as hypothesized, confirming that there was a low level of communication between both forest managers and wood products manufacturers from the point of view of the forest managers.

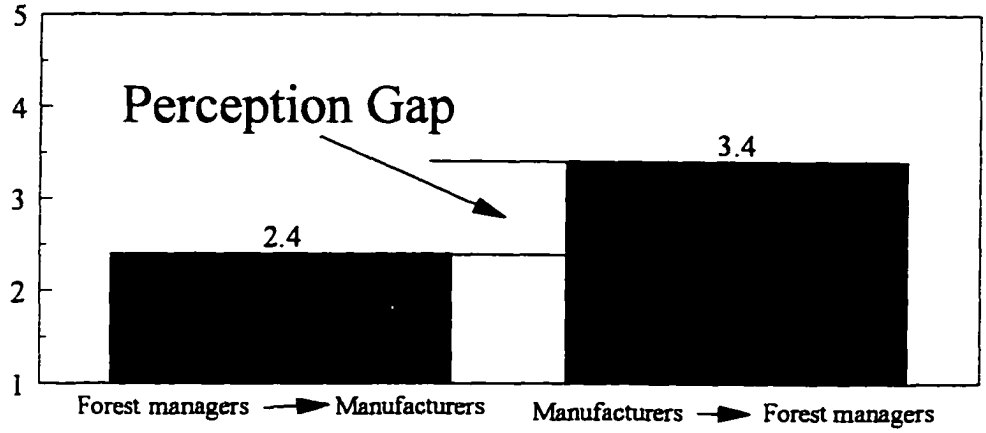
H6b: **From the point of view of the wood products manufacturers**, there was a low level of communication between them and the forest managers. Values reported from the analysis were:

- mean=3.4
- standard deviation=1.2
- t-value=12.1
- p-value=0.1

The p-value of 0.1 indicates that the hypothesis (H6b) was statistically non-significant (at α=0.1 level) and not directionally as hypothesized. This showed that from the point of view of the wood products manufacturers, there was a high level of communication between them and the forest managers.

In addition, a t-test was performed to confirm if there were a significant gap between the viewpoints of the forest managers and the wood products manufacturers. It was found that the mean difference between the responses of the forest managers and the wood products manufacturers was statistically significant (a gap of 1.0 on a five point scale, t=-2.5, p=0.017) indicating that a large gap existed in their perception of communicating with each other (Figure 65).

While wood products manufacturers believe that their communication with forest managers was neither low nor high, forest managers reported that they had a low level of communication with wood products manufacturers. This result was confirmed by the fact that wood products manufacturers communicated with forest managers only if they wanted to purchase seedlings from them. Seedlings were purchased from forest managers and delivered to the indigenous people in order to regenerate forests where logging takes place.



*Differences are statistically significant at alpha=.05

Figure 65. Perception Gap of Current Communication Between Forest Managers and Wood Products Manufacturers Scale: 1=very low to 5=very high

H7a: **From the point of view of the forest managers**, there was a low level of communication between them and university officials. Statistics reported by the analysis were as follows:

- mean=2.8
- standard deviation=1.7
- t-value=-0.6
- p-value=0.72

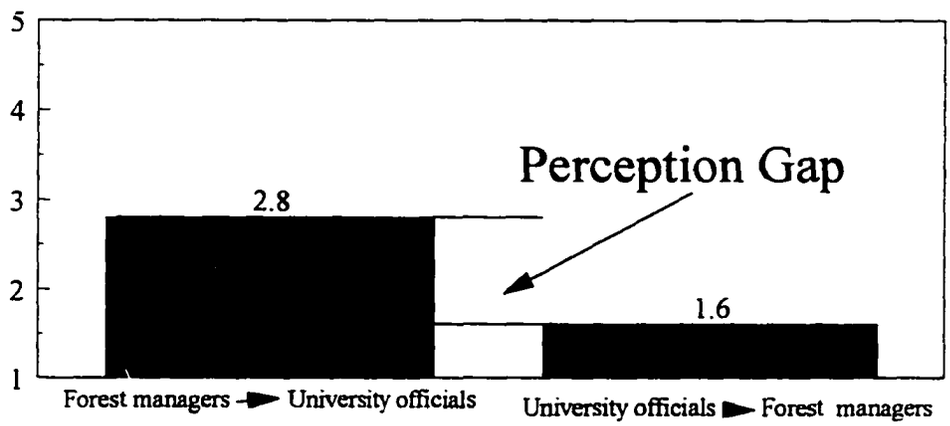
The p-value of 0.72 indicates that the hypothesis (H7a) was not statistically significant (at α=0.05 level) but directionally as hypothesized, thus confirming that there was a low level of communication between forest managers and university officials from the point of view of the forest managers.

H7b: **From the viewpoint of university officials**, there was a high level of communication between them and the forest managers. Values were:

- mean=1.6
- standard deviation=0.8
- t-value=-5.3
- p-value=0.000

The p-value of 0.000 indicates that the hypothesis (H7b) was statistically significant (at α=0.05 level) but not directionally as hypothesized. This showed that from the viewpoint of the university officials, there was a low level of communication between them and the forest managers.

In addition, a t-test was done to confirm if there were a significant gap between the responses of the forest managers and the university officials. It was found that the mean difference between the responses of the forest managers and the university officials was statistically significant (a gap of 1.2 on a five point scale, t=2.8, p=0.009) indicating that a large gap existed in their perception of communicating with each other (Figure 66). With a mean rating of 2.8 on a five point scale, forest managers believe that they had a low level of communication with the university officials. University officials indicated that their communication with the forest managers was very low. Often, in Côte d'Ivoire, there is little or no contact between forest managers and university officials because of the isolated role that university officials entertain in the forest utilization and management practices.



*Differences are statistically significant at alpha=.05

Figure 66. Perception Gap of Current Communication Between Forest Managers and University Officials Scale: 1=very low to 5=very high

H8a: **From the point of view of the indigenous people**, there was a low level of communication between them and the wood products manufacturers. Values reported from the analysis were as follows:

- mean=1.2
- standard deviation=0.5
- t-value=-17.3
- p-value=1.0

The p-value of 1.0 indicates that the hypothesis (H8a) was statistically non-significant (at α=0.05 level) but directionally as hypothesized, thus confirming that there was a low level of communication between the indigenous people and the wood products manufacturers.

H8b: **From the point of view of the wood products manufacturers**, there was a low level of communication between them and the indigenous people. Statistics from the analysis were:

- mean=4.2
- standard deviation=0.8
- t-value=6.1
- p-value=0.000

The p-value of 0.000 reveals that the hypothesis (H8b) was statistically highly significant (at α=0.05 level) but not directionally as hypothesized, indicating that there was a high level of communication between the wood products manufacturers and the indigenous people from the point of view of the wood products manufacturers.

Additionally, a t-test was conducted to confirm if there were a significant gap between the responses of the indigenous people and the wood products manufacturers. It was found that the mean difference between the responses of the indigenous people and the wood products manufacturers was statistically highly significant (a gap of 3.0

on a five point scale, t=-13.54. p=0.000) revealing that a large gap existed in their perception of communicating with each other (Figure 67).

With a mean rating of 1.2 on a five point scale, the indigenous people believe that their level of communication with wood products manufacturers was very low, whereas with a mean rating of 4.2, wood products manufacturers reveal that they had a high level of communication with the indigenous people. This contradictory perception of communicating between both stakeholders explains the lack of understanding and better communication link between the indigenous people and wood products manufacturers. Usually, the only occasion when the indigenous people interact with the wood products manufacturers is when logging takes place in their community. Wood products manufacturers seek the permission from the indigenous people to harvest their timbers, and this leads them to believe that they have a high level of communication with the indigenous people. Indigenous people however, believe that the only time that they communicate with the wood products manufacturers is when they require the construction of socio-economic infrastructures such as health centers, schools and roads from the wood products manufacturers. Otherwise, they believe that there is a lack of continuous communication between them and the wood products manufacturers. As it was said earlier in this study, indigenous people's level of communication with the other stakeholder groups was minimal. Often they were only involved in the process when their services were needed. For example, communication would exist between wood products manufacturers and indigenous people when wood products manufacturers felt necessary to deal with them. Once the wood products

manufacturers deal was fulfilled, there was no longer a communication link between them and the indigenous people.

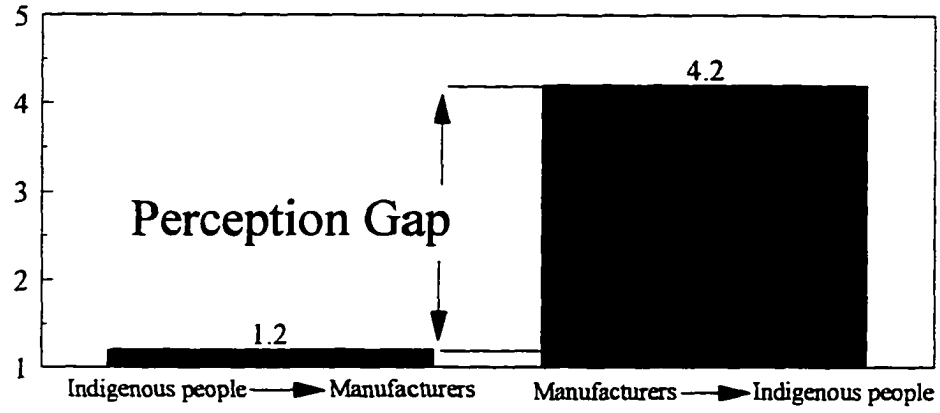


Figure 67. Perception Gap of Current Communication Between Indigenous People and Wood Products Manufacturers Scale: 1=very low to 5=very high

H9a: **From the point of view of the indigenous people**, there is a high level of communication between them and the university officials. Values from the analysis were as follows:

- mean=1.0
- standard deviation=0.2
- t-value=-47.0
- p-value=0.000

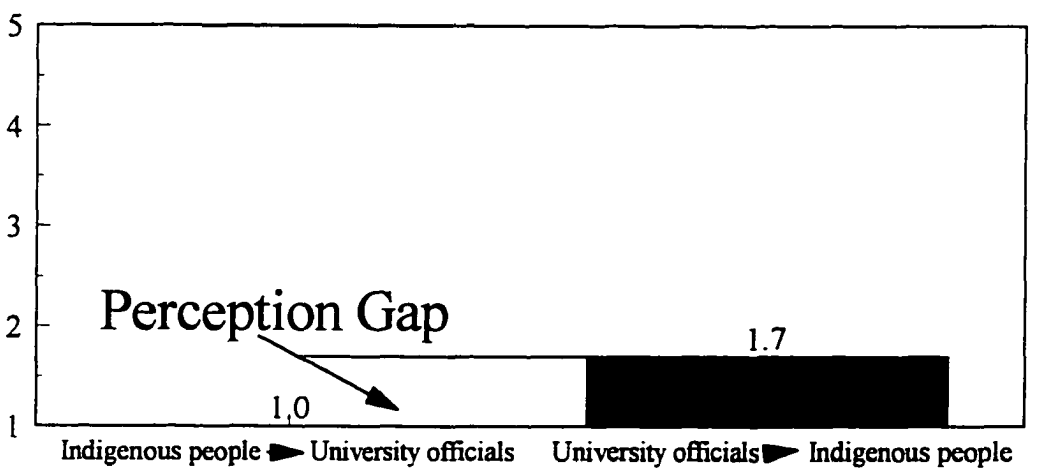
The p-value of 0.000 shows that the hypothesis (H9a) was statistically significant (at α=0.05 level) but not directionally as hypothesized, indicating that there was a low level of communication between the indigenous people and the university officials.

H9b: **From the point of view of the university officials**, there was a high level of communication between them and the indigenous people. Statistics from the analysis were as follows:

- mean=1.7
- standard deviation=1.3
- t-value=-3.1
- p-value=0.007

The p-value of 0.007 reveals that the hypothesis (H9b) was statistically significant (at α=0.05 level) but not directionally as hypothesized. This showed that from the viewpoint of the university officials, there was a low level of communication between them and the indigenous people. It was found that the mean difference between the responses of the indigenous people and the university officials was not statistically significant (a gap of 0.7 on a five point scale, t=-1.6, p=0.16) indicating that only a small gap existed in the perception of communicating with each other (Figure 68).

Both stakeholders believe that they had a very low communication with each other. This result confirms that university officials are completely isolated from the rural community and vice-versa.



*Differences are not statistically significant at alpha=.05

Figure 68. Perception Gap of Current Communication Between Indigenous People and University Officials Scale: 1=very low to 5=very high

H10a: **From the point of view of the wood products manufacturers**, there was a high level of communication between them and the university officials. Statistics from the analysis were as follows:

- mean=1.6
- standard deviation=1.0
- t-value=-5.6
- p-value=0.000

The p-value of 0.000 indicates that the hypothesis (H10a) was statistically significant (at α=0.05 level) but not directionally as hypothesized. This showed that from the viewpoints of the wood products manufacturers, the communication level between them and the university officials was very low.

H10b: **From the point of view of the university officials**, there was a high level of communication between them and the wood products manufacturers. Values from the analysis were:

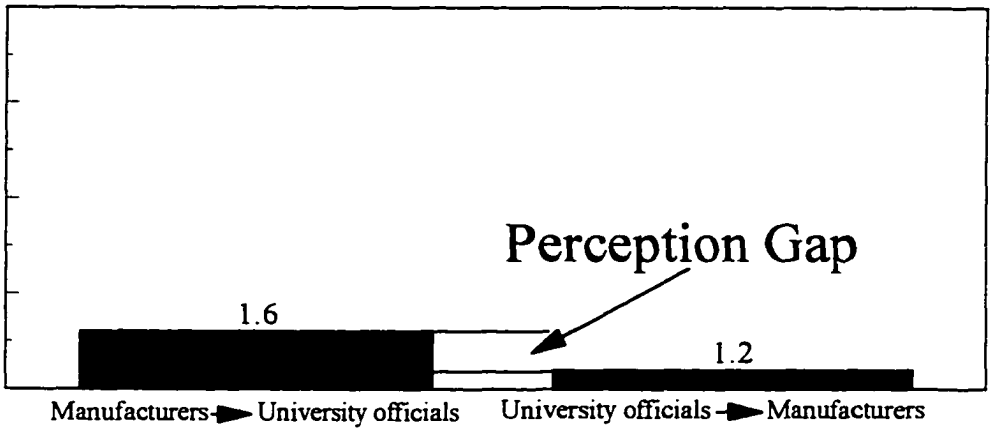
- mean=1.2
- standard deviation=0.4
- t-value=-14.9
- p-value=0.000

The p-value of 0.000 reveals that the hypothesis (H10b) was statistically significant (at α=0.05 level) but not directionally as hypothesized, this indicates that from the viewpoint of the university officials, the communication level between them and the wood products manufacturers was very low.

In addition, a t-test was conducted to confirm if there were a significant gap between the viewpoints of the university officials and the wood products manufacturers. It was found that the mean difference in the responses of the wood

products manufacturers and the university officials was not statistically significant (a gap of 0.4 on a five point scale, t=1.7, p=0.11) revealing that only a small gap existed in their perception of communicating with each other (Figure 69).

The wood products manufacturers and the university officials agree that there is a very low level of communication between them. This is because the university system seems to be isolated from the practical realities.



*Differences are not statistically significant at alpha=.05

Figure 69. Perception Gap of Current Communication Between Wood Products Manufacturers and University Officials Scale: 1=very low to 5=very high

Discussion

Out of the twenty hypotheses that were tested, only four were confirmed directionally but not statistically (Table 57 on page 175). A summary of the actual levels of communication among the stakeholder groups is given in Figure 70. As seen in the figure, the communication between the policymakers and forest managers was the strongest. This could be explained by the fact that policymakers and forest managers are both government agencies that report to the Ministry of Agriculture and Natural Resources, and thus have a greater chance to interact with each other.

Policymakers come up with theoretical models of forest utilization and management activities, while forest managers put them into practice. Thus, both agencies are complementary to each other.

It can also be noted that there was occasional communication between policymakers and wood products manufacturers, and also between forest managers and wood products manufacturers. The first can be explained by the fact that policymakers are in charge of providing concessions, and collecting taxes from the wood products manufacturers. Secondly wood products manufacturers purchase seedlings from forest managers for the purpose of forest regeneration in their attributed perimetres in order to reforest areas where logging takes place.

However, there exists minimal communication among the other stakeholder groups. It can be noted that the university officials and the indigenous people have low levels of communication with all other stakeholder groups. In the case of university officials, the communication gap is perceived by both the university officials and the other stakeholder groups involved, thus reflecting the isolation of the university officials from other stakeholders in Côte d'Ivoire. But in the case of the indigenous people, it is seen that whereas the indigenous people themselves felt that there is a low level of communication between them and the other stakeholder groups involved, the other groups (except for the university officials) felt that there is a high level of communication with the indigenous people. This might be explained by the egocentric view of the stakeholder groups involved. The egocentric view refers to what each individual stakeholder thinks about its current level of communication with the other stakeholder groups.

These communication gaps that exist, unless repaired, may have serious implications in forest utilization and management in Côte d'Ivoire.

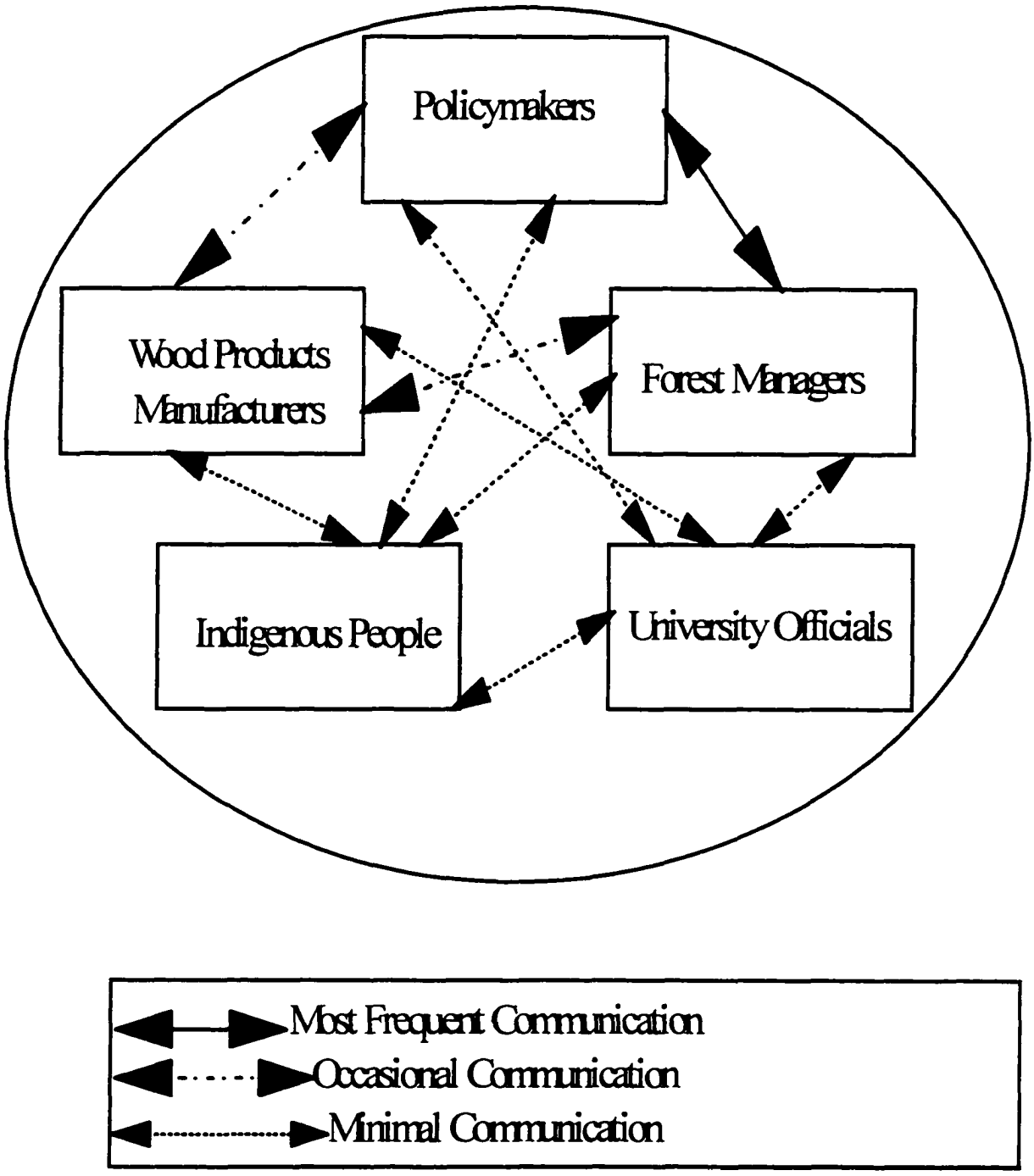


Figure 70. Summary Model of Actual Levels of Communication Among the Stakeholder Groups

CHAPTER 7

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

One of the most efficient ways to reduce the deforestation rate in Côte d'Ivoire is to attack the fundamental causes of the problem: extensive increases in the agricultural land base, rural poverty, the natural growth rate of the population and legislation of immigration. These tasks must be primarily the responsibility of the government rather than international organizations.

Policies in place are theoretically sound and realizable, but they must be accepted by all forest resources stakeholders. Thus, legislative measures and instruments should encourage the inclusion of all stakeholder groups. The promotion of private property rights should also be encouraged. One of the most important characteristic of sustainable forest management is the development of technical and multidisciplinary skills and quality of human resources (Report of United Nations Conference On Environment And Development 1992). Political and economic structures must be decentralized to attract and ensure a rational and holistic approach to the sustainable forest utilization and management in Côte d'Ivoire.

Economic development must integrate a concept of economic growth and social objectives. Only appropriate sustainable forest management practices will guarantee the maintenance or growth of forestland which, in turn, will provide sustainable wood products production base to improve living conditions of people in Côte d'Ivoire.

In the effort to control unsustainable forest resource utilization activities, the government of Côte d'Ivoire has already taken certain measures to encourage effective and efficient forest resource utilization practices. For example, the government decided to halt illicit farming and has promoted the reforestation of gazetted forests, and since 1995, a total ban of the export of all hardwoods has been in place. The standard timber concessions were increased from 2,500 hectares to 30,000-60,000 hectares in the middle of the 1990s. The purpose of the sharp increase in timber concessions is to encourage the maintenance of long term sustainable forest development programs while adopting successful forest management activities and pursuing forest regeneration.

Despite the positive direction taken by the government to encourage and promote sustainable forest utilization and management activities, there is still some need for improvements to be made. These needs must not only be the task of the government, but must include all individuals or parties involved in forest utilization practices in Côte d'Ivoire.

Results of this study have tested various hypotheses based on all aspects of the theoretical stakeholder communication model. The study addressed in depth all the research objectives. The demographic characteristics of the stakeholders were first examined in order to give an overall picture of all the parties involved in forest utilization and management practices in Côte d'Ivoire.

It may be recalled that the theoretical model states that the relationships among the stakeholder groups influence forest utilization which, in turn, influences outcomes such as deforestation, forest regeneration, and forest protection. However, tests of the hypotheses based on this model show a lack of two-way communication among the

stakeholder groups. High two-way communication existed only between two stakeholder groups, the policymakers, and the forest managers. The other stakeholder groups had either occasional or minimal communication with each other.

This lack of communication is expected to influence the next level of the theoretical model, namely, forest utilization and management activities in an adverse manner. This could trickle down to the third level of the model namely, outcomes such as deforestation, forest protection, and regeneration. So, it follows that in order to have better outcomes at this level, and sustainable forest utilization and management activities, the communication gaps among the stakeholders must be closed.

It is also found that among the twenty hypotheses formulated to conduct this study, only four hypotheses are directionally confirmed and sixteen are directionally in disagreement. Thus, the result confirmed the assertion that the previous studies were only limited to government officials, making it difficult to formulate many hypotheses that would have be confirmed.

Towards this end, the following recommendations and discussion are made based on this study.

Stakeholder Recommendations

In this study, opportunities were given to the respondents to discuss suggestions and/or recommendations to improve forest resources utilization and management in Côte d'Ivoire. A multitude of ideas were expressed and recorded by the researcher.

The respondents believe that there is an immediate need to include natural resources and environmental issues management as part of the curriculum in the Ivorian primary, secondary, and university school systems. This will build awareness of the

importance of forests in human welfare for all, and encourage participation in the process. Media and public relation should also be used to promote and encourage the idea of forest conservation and sustainable forest utilization and management activities among stakeholders. Advanced forestry studies by universities and other organizations should be available to all the parties involved in order to continuously enforce the sustainable forest management through research, seminars and conferences. In the long term, these recommendations will help to discourage deforestation and promote sound forest utilization and management practices.

In the short term, the respondents recommend private landownership in Cote d'Ivoire. Such ownership will prevent abusive land sales that lead to the massive destruction of the forestlands by creating more responsibility on the part of the owners towards the land. The respondents also believe that there is a need for the government to discourage the expansion of cash crop plantations, and slash and burn traditional practices. The respondents reveal that the traditional method of cultivating the forestlands could be reduced by subsidizing indigenous people with agriculture inputs and encouraging them to utilize the same plots every year.

With respect to forest policy decision-making processes, the respondents strongly believe that all stakeholder groups should be involved in forest resources planning with policymakers.

Forest regeneration must be made an issue that is of concern to all the citizens. In order to encourage this, the respondents believe that forest regeneration should be made to be economically rewarding to all the individuals involved in the reforestation process. They also believe that technical expertise and financial incentives must be

given to the indigenous people in exchange for help with forest protection and regeneration.

Researcher Recommendations

(1) Pressures on forestlands should be reduced by intensifying agriculture on open woodlands, incorporating trees into farming and pastoral systems, and establishing plantations on degraded, already cleared land rather than cutting undisturbed forests.

(2) The government should take immediate steps to minimize or eliminate further destruction of classified forests and other conservation areas identified as being under severe threat of unlawful encroachment.

(3) Policymakers should aggressively refine their forest policies to stop and/or control individuals from selling forestlands for short-term gains.

(4) Forest policymakers should also work closely with planners in agriculture, energy, industry and other sectors to design broadly based agriculture and energy programs in which forestry will play a vital, though not always the lead role.

(5) It will also be important to expand promotion and extension support for forestry conservation and development on woodlands and savannah outside government controlled forest reserves. Through education, extension and awareness programs, encourage recognition of trees and forests as worthwhile "crops" to be cared for in their own right.

(6) Government should promote recreational, protective and aesthetic values rather than just solely for production.

(7) Government macroeconomics growth and expansion policies should emphasize job opportunities outside agriculture to sharply reduce the numbers who depend directly on agriculture for a living and ease the pressure on forestlands.

(8) With a greater political commitment, government should modify and expand forestry training and education programs to place greater emphasis on extension skills, agroforestry and conservation of forest ecosystems.

(9) Policymakers must encourage the indigenous people to participate in forest policy decision-making processes and help promote the decentralization of forest management by discouraging top-down management. Not only do the indigenous people have the best incentive to effectively manage their resources, but their basic survival and socioeconomic development depend directly on a productive natural resource base and have also better firsthand knowledge of the land and traditional tools. They can also respond quicker to changing conditions.

Discussion

For sustainable forest utilization and management practices to occur, all stakeholders in the study should be willing and able to communicate efficiently with one another. There should be a mutual agreement between stakeholders as they effectively communicate with one another in the process of forest utilization and management practices in Cote d'Ivoire. In doing so, the communication objective should always be based on two-way communication principles such as mutual respect and exchange of ideas, and participative decision-making. Thus, there should not be a dominant stakeholder to influence the direction and quality of the communication.

Top-down communication should be prevented, and participative communication practices should always be encouraged and promoted.

Particular attention should be given to indigenous people as they are the primary users of forestlands. The inputs of the indigenous people would be very determinant as they will directly affect forest utilization and management in Côte d'Ivoire.

The role of the university officials should be expanded so that they can be more active in forest utilization and management. Opportunities for research and forest extension projects should be available to university officials. Seminars and conferences emphasizing forest utilization and management should periodically be organized so that the general public can be informed about forest issues and the interaction among the stakeholder groups. A curriculum that emphasizes creating an awareness about forest utilization, management, and conservation should be developed. Efforts should also be made by the university officials to reach out to the other stakeholder groups, particularly the indigenous people, and disseminate information through activities such as the creation of professional and other forest related associations.

A greater role should be given to the wood products manufacturers in establishing a sustainable forest utilization and regeneration practices. They should be more actively involved in services such as providing seedling and technical assistance to the indigenous people, in order to help regenerate the forests where logging takes place. Policymakers should encourage and promote large scale forest plantations in northern savannah regions. Savannah is defined as high grass land where climate and environment are not friendly to perennial crops. Often these regions are abandoned by

farmers to migrate into forestlands in the southern and western parts of Côte d'Ivoire. Policymakers should expand wood products manufacturers' concessions to northern region. The primary objectives of the expansion of the concessions are to allow wood products manufacturers to create vast forest plantations in northern Côte d'Ivoire while timber harvesting is done in southern and western forest regions.

Reference

Report of the United Nations Conference On Environment And Development. 1992. Rio de Janeiro, Brazil.

APPENDIX A
SURVEY INSTRUMENTS

Questionnaire for Forest Managers

This interview is designed to collect information on your interest in learning more about forest industry in Côte d'Ivoire. Your participation is voluntary and your individual responses will not be shared with anyone. Information collected from respondents will be analyzed in groups. Statements about your interests, perceptions, views, and desires regarding sustainable forest resources utilization and management will be made. Please be open and sincere while expressing your opinions.

Forest Utilization and Regeneration Practices

Section I: General Information

Name of Institution_____
Date of Creation_____
Department_____
Number of Employees_____

1. Age:

20-30_____; 31-40_____; 41-50_____; 51-60_____; 61+_____

2. Gender:

Male_____
Female____
Married___

3. Family Size:
0-4_____
5-9_____
10+_____

4. Education:

Primary_____
High School_____
Undergraduate_____
Graduate____

5. Occupation_____

6. Annual Income:

$0000- $9,000_____
$9,001- $18,000_____
$18,001- $28,000_____
$28,001- $38,000_____
$38,001- $48,000_____
$48,001- $58,000_____
$58,001- $68,000_____

Section II: Forest Utilization and Regeneration Practices

7. For the statements below, please indicate your level of agreement or disagreement regarding the role of the forest in five domains of human welfare in your community by circling the single most appropriate number after each statement.

Forestland...

	Strongly disagree		Neither disagree nor agree		Strongly agree
has protective services	1	2	3	4	5
has educational services	1	2	3	4	5
has psycho-physiological influences	1	2	3	4	5
can be used for consumption of plants, animals, derivatives	1	2	3	4	5
is a source of land and living space	1	2	3	4	5

8. Below, are different methods used to generate energy (cooking, lighting, etc.). Please put **1** to show the most popular and important method of energy used in your household, **2** to the next most important method and so on.

a. Fuelwood_____
b. Charcoal_____
c. Gas_____
d. Other specify_____

9. Suppose you own 1000 hectares of forests, how would this land serve you?

_____

_____

_____

_____

10. How important are each of the following elements in forest utilization and forest regeneration practices?

Very unimportant	**1**	**2**	**3**	**4**	**5**	**Very important**
a. Technical assistance		__	__	__	__	
b. Financial assistance	__	__	__	__	__	
c. Management expertise	__	__	__	__	__	
d. Environmental awareness	__	__	__	__	__	

11. Are your lands owned by the community?
Yes____; No_____

12. If **Yes**, how is land use governed? Who can use it? And how its usage is segregated?

_____

_____

_____

_____

13. Do you own your land?
Yes____;No_____

14. If **Yes**, do you have your land titles?
Yes___; No____

15. Have you ever sold some land(s)/
Yes_____; No_____

16. If **Yes**, how much did you earn?
$_____for how many hectares?_____. When this happened?_____. Where it happened?_____

17. Do you have some plantations?
Yes____; No_____

18. If **Yes**, how many hectares do you own?_____

19. What kind of crops do you grow?

_____

_____

_____

_____

20. Please, check the single most important factor that is applied to you?
Private landownership is:
a. Unimportant_____
b. Important_____
c. Very important_____
d. Do not know_____

Section III. Forest Management

21. How long does it take for a cut forest to regenerate?
0-5 years_____
6-11 years_____
12-17 years_____
18-23 years_____
24+ years_____

22. Please, check the method used to regenerate depleted forest resources.
a. Natural method (fallow)_____
b. Direct seedling_____
c. Tree Planting_____
d. All above_____
e. Other specify_____

23. Do you grow trees for the purpose of forest regeneration?
Yes_____; No_____

24. If **No**, under what condition would you consider such policy?

_____

_____

_____

_____

25. Are you aware of methods to better care for the forestland in Cote d'Ivoire?

_____

_____

_____

_____

26. What can be done to prevent the forest from being over utilized?

_____
_____
_____
_____

Strategic framework to establish two-way communication between indigenous landowners and policymakers.

Section IV: Forest Policies and Policies' Communication

27. Does the government have policies or programs which are intended to encourage forest based economic development?

a. Currently researching concept_____
b. Program in development_____
c. Approved, awaiting funding_____
d. Funded, implementation stage_____
e. None_____
f. Yes_____since_____year
g. Do not know_____

28. If **Yes,** what are the programs?

_____
_____
_____
_____

29. If **Yes**, approved or funded, were these policies or programs initiated by:

a. National Assembly_____
b. Office of the President_____
c. International Development Agency_____
d. Minister of Agriculture and Environmental Protection_____
e. Other specify_____

30. How often is your organization associated or informed about forest policies or programs?

Every 6 months_____
Every 12 months_____
Every 24+ months_____
Not at all_____

31. How often is your organization assisted by the forestry officials to discuss issues related to the use of forestland?

Every 6 months_____
Every 12 months_____
Every 24+ months_____
Very seldom_____
Not at all_____

32. How often rural communities are involved in forest policy decision-making process?

Never_____
Sometimes_____
Very often_____

33. Do you think involving rural population in forest policy decision making process is a better forest management practices? Why? Why not?

_____
_____
_____
_____

34. Can you think of some recommendations that can best suit forest management in Cote d'Ivoire?

_____
_____
_____
_____

Section V: Forest Industry Development

35. Indicate the relative importance of the following forest industry elements in Cote d'Ivoire.

Very unimportant	**1**	**2**	**3**	**4**	**5**	**Very Important**
Attracting new primary industry	—	—	—	—	—	
Attracting new value added industry	—	—	—	—	—	
Increase employment in the industry	—	—	—	—	—	
Increase market share of Cote d'Ivoire forest products in world market	—	—	—	—	—	
Encourage use of underutilized timber species	—	—	—	—	—	
Promote forestry education, technology transfer, and technical assistance	—	—	—	—	—	
Guarantee future timber supply	—	—	—	—	—	
Support rural economic development	—	—	—	—	—	
Increase export opportunities in the wood industry	—	—	—	—	—	
Industry modernization	—	—	—	—	—	
Promote network formation	—	—	—	—	—	
Promote entrepreneurship	—	—	—	—	—	

36. Please indicate which industry sectors should be encouraged or promoted.

Existing primary forestry industry?_____
Existing secondary forest products industry?_____
Attract new primary forestry industry?_____
Attract new secondary forestry industry?_____

37. If target sectors are existing industries, what methods are used to promote new markets for these industries?

Advertising at trade shows_____
Reporting market prices_____
Distributing product information_____
Publishing industry directories_____
Foreign market exploration/marketing_____
Other_____

38. What methods should be used in your opinion?

_____
_____
_____
_____

39. If attracting new industry, what methods are used to promote new markets for these industries?

Reporting business climate_____
Reporting labor conditions_____
Reporting site available for development_____
Offering tax incentives_____
Other_____

40. Which following elements have/are being created as part of government forest industry development programs?

	Planned	Approved	Existing	Do not Exist
a. Marketing and promotion	_____	_____	_____	_____
b. Forest management	_____	_____	_____	_____
c. Wood industry				
loans	_____	_____	_____	_____
grants	_____	_____	_____	_____
tax incentives	_____	_____	_____	_____
d. Export assistance	_____	_____	_____	_____
e. Educational Assistance				
Labor training	_____	_____	_____	_____
Management training	_____	_____	_____	_____

Section VI: Successful Elements

41. List the three most successful areas of government programs since its implementation.

1._____
_____

2._____
_____

3._____
_____

42. What factors led to these successes?

_____
_____
_____
_____

43. What role did the following factors play in establishing the programs(s) and adding to their success?

Very unimportant	**1**	**2**	**3**	**4**	**5**	**Very Important**
Strong government leadership	—	—	—	—	—	
International Development Agency Cooperation	—	—	—	—	—	
National economy conditions	—	—	—	—	—	
Adequate funding	—	—	—	—	—	
Forest resource considerations	—	—	—	—	—	
Global forest products demand	—	—	—	—	—	
Other_____	—	—	—	—	—	

Section VII: Program Deficiencies

44. List three areas in which government forest industry development programs have been unsuccessful.

1. _____
_____

2. _____
_____

3. _____
_____

45. What factors led to this situation?

_____
_____
_____
_____

46. What program elements do you feel should be added to the existing program(s) in order for it (them) to succeed?

_____
_____
_____
_____

Section VIII: Forest Management issues

47. Have you ever done a forest inventory?

Yes_____; No_____

48. If **Yes**, how often_____

49. When was the last time the forest inventory was done?

_____

50. What is the current gross national standing volume?_____million cubic meters.

51. Out of the national standing volume, what is the percentage share of most commercially valuable trees?

_____

52. Name few commercially important trees of your choice.

_____ _____ _____ _____ _____ _____

_____ _____ _____ _____ _____ _____

53. What strategies should be used to maintain sustainable the forestland in Cote d'Ivoire?

_____
_____
_____
_____

54. Describe your organization's activities regarding forest management.

_____
_____
_____
_____

55. Describe your organization's activities regarding forest regeneration and environmental protection.

_____
_____
_____
_____

56. What resources do you have to perform your tasks?

_____
_____
_____
_____

57. Are these resources enough?

Yes_____; No_____

58. If **No**, what additional resources are necessary for your organization?

_____
_____
_____
_____

59. Give your impressions of the state of forest in Cote d'Ivoire?

_____
_____
_____
_____

60. What do you think should be done to get better results in terms of forest regeneration?

_____
_____
_____
_____

61. Do you have a strategy of communication with rural people in the context of forest regeneration?
Yes_____; No_____

62. If **Yes,** describe this strategy. If **No,** why ***Not.***

63. What are the trees species used in your forest regeneration programs?

64. Indicate the level of involvement you have with the following with regard to forest management in Côte d'Ivoire.

Very low	**1**	**2**	**3**	**4**	**5**	**Very high**
Current level of involvement with government policymakers	—	—	—	—	—	
Desired level of involvement with government policymakers	—	—	—	—	—	
Current level of involvement with university	—	—	—	—	—	
Desired level of involvement with university	—	—	—	—	—	
Current level of involvement with wood products manufacturers	—	—	—	—	—	
Desired level of involvement with wood products manufacturers	—	—	—	—	—	
Current level of involvement with indigenous	—	—	—	—	—	
Desired level of involvement with indigenous	—	—	—	—	—	

Questionnaire for University Officials

This interview is designed to collect information on your interest in learning more about forest industry in Côte d'Ivoire. Your participation is voluntary and your individual responses will not be shared with anyone. Information collected from respondents will be analyzed in groups. Statements about your interests, perceptions, views, and desires regarding sustainable forest resources utilization and management will be made. Please be open and sincere while expressing your opinions.

Forest Utilization and Regeneration Practices

Section I: General Information

Name of Institution_____
Date of Creation_____
Title or Position_____
Department or School _____
Number of Employees_____

1. Age:

20-30_____; 31-40_____; 41-50_____; 51-60_____; 61+_____

2. Gender:

Male_____
Female____
Married___

3. Family Size:
0-4_____
5-9_____
10+_____

4. Education:

Primary_____
High School_____
Undergraduate_____
Graduate____

5. Occupation_____

6. Annual Income:

$0- $9,000_____
$9,001- $18,000_____
$18,001-$28,000_____
$28,001- $38,000_____
$38,001- $48,000_____
$48,001- $58,000_____
$58,001- $68,000_____

Section II: Forest Utilization and Regeneration Practices

7. For the statements below, please indicate your level of agreement or disagreement regarding the role of the forest in five domains of human welfare in your community by circling the single most appropriate number after each statement.

Forestland...

	Strongly disagree		Neither disagree nor agree		Strongly agree
has protective services	1	2	3	4	5
has educational services	1	2	3	4	5
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can be used for consumption of plants, animals, derivatives	1	2	3	4	5
is a source of land and living space	1	2	3	4	5

8. Below, are different methods used to generate energy (cooking, lighting, etc.). Please put **1** to show the most popular and important method of energy used in your household, **2** to the next most important method and so on.

a. Fuelwood_____
b. Charcoal_____
c. Gas_____
d. Other specify_____

9. Suppose you own 1000 hectares of forests, how would this land serve you?

_____
_____
_____
_____

10. How important are each of the following elements in forest utilization and forest regeneration practices?

Very unimportant	1	2	3	4	5	**Very important**
a. Technical assistance	__	__	__	__	__	
b. Financial assistance	__	__	__	__	__	
c. Management expertise	__	__	__	__	__	
d. Environmental awareness	__	__	__	__	__	

11. Are your lands owned by the community?
Yes____; No_____

12. If **Yes**, how is land use governed? Who can use it? And how its usage is segregated?

_____
_____
_____
_____

13. Please, check the single most important factor that is applied to you?
Private landownership is:
a. Unimportant_____
b. Important_____
c. Very important_____
d. Do not know_____

Section III. Forest Management

14. How long does it take for a cut forest to regenerate?
0-5 years_____
6-11 years_____
12-17 years_____
18-23 years_____
24+ years_____

15. Please, check the method used to regenerate depleted forest resources.
a. Natural method (fallow)_____
b. Direct seedling_____
c. Tree Planting_____
d. All above_____
e. Other specify_____

16. Do you grow trees for the purpose of forest regeneration?
Yes_____; No_____

17. If **No**, under what condition would you consider such policy?

_____
_____
_____
_____

18. Are you aware of methods to better care for the forestland in Côte d'Ivoire?

_____
_____
_____
_____

19. What can be done to prevent the forest from being over utilized?

_____
_____
_____
_____

Strategic framework to establish two-way communication between indigenous landowners and policymakers.

Section IV: Forest Policies and Policies' Communication

20. Does the government have policies or programs which are intended to encourage forest based economic development?

a. Currently researching concept_____
b. Program in development_____
c. Approved, awaiting funding_____
d. Funded, implementation stage_____
e. None_____
f. Yes_____since_____year
g. Do not know_____

21. If **Yes,** what are the programs?

_____
_____
_____
_____

22. If **Yes**, approved or funded, were these policies or programs initiated by:

a. National Assembly_____
b. Office of the President_____
c. International Development Agency_____
d. Minister of Agriculture and Environmental Protection_____
e. Other specify_____

23. How often is your institution associated or informed about forest policies or programs?

Every 6 months_____
Every 12 months_____
Every 24+ months_____
Not at all_____

24. How often is your institution assisted by the forestry officials to discuss issues related to the use of forestland?

Every 6 months_____
Every 12 months_____
Every 24+ months_____
Very seldom_____
Not at all_____

25. How often is your institution involved in forest policy decision-making process?

Never_____
Sometimes_____
Very often_____

26. Do you think involving your institution in forest policy decision making process is a better forest management practices? Why? Why not?

_____
_____
_____
_____

27. Can you think of some recommendations that can best suit forest management in Côte d'Ivoire?

_____
_____
_____
_____

Section V: Forest Industry Development

28. Indicate the relative importance of the following forest industry development elements in Cote d'Ivoire.

Very unimportant	**1**	**2**	**3**	**4**	**5**	**Very important**
Attracting new primary industry	—	—	—	—	—	
Attracting new value added industry	—	—	—	—	—	
Increase employment in the industry	—	—	—	—	—	
Increase market share of Cote d'Ivoire forest products in world market	—	—	—	—	—	
Encourage use of underutilized timber species	—	—	—	—	—	
Promote forestry education, technology transfer, and technical assistance	—	—	—	—	—	
Guarantee future timber supply	—	—	—	—	—	
Support rural economic development	—	—	—	—	—	
Increase export opportunities in the wood industry in world market	—	—	—	—	—	
Industry modernization	—	—	—	—	—	
Promote network formation	—	—	—	—	—	
Promote entrepreneurship	—	—	—	—	—	

29. Please indicate which industry sectors should be encouraged or promoted.

Existing primary forestry industry?_____
Existing secondary forest products industry?_____
Attract new primary forestry industry?_____
Attract new secondary forestry industry?_____

30. If target sectors are existing industries, what methods are used to promote new markets for these industries?

Advertising at trade shows_____
Reporting market prices_____
Distributing product information_____
Publishing industry directories_____
Foreign market exploration/marketing_____
Other_____

31. What methods should be used in your opinion?

_____
_____
_____
_____

32. If attracting new industry, what methods are used to promote new markets for these industries?

Reporting business climate_____
Reporting labor conditions_____
Reporting site available for development_____
Offering tax incentives_____
Other_____

33. Which following elements have/are being created as part of government forest industry development program(s)?

	Planned	**Approved**	**Existing**	**Do not Exist**
a. Marketing and promotion	_____	_____	_____	_____
b. Forest management	_____	_____	_____	_____
c. Wood industry				
loans	_____	_____	_____	_____
grants	_____	_____	_____	_____
tax incentives	_____	_____	_____	_____
d. Export assistance	_____	_____	_____	_____
e. Educational Assistance				
Labor training	_____	_____	_____	_____
Management training	_____	_____	_____	_____

Section VI: Successful Elements

34. List the three most successful areas of the program(s) since its implementation.

1._____
_____

2._____
_____

3._____
_____

35. What factors led to these successes?

_____
_____
_____
_____

36. What role did the following factors play in establishing the programs(s) and adding to their success?

Very unimportant	**1**	**2**	**3**	**4**	**5**	**Very Important**
Strong government leadership	__	__	__	__	__	
International Development Agency Cooperation	__	__	__	__	__	
National economy conditions	__	__	__	__	__	
Adequate funding	__	__	__	__	__	
Forest resource considerations	__	__	__	__	__	
Global forest products demand	__	__	__	__	__	
Other_____	__	__	__	__	__	

Section VII: Program Deficiencies

37. List three areas in which government forest industry development programs have been unsuccessful

1. _____
   _____

2. _____
   _____

3. _____
   _____

38. What factors led to this situation?

_____
_____
_____
_____

39. What program elements do you feel should be added to the existing program(s) in order for it (them) to succeed?

_____
_____
_____
_____

Section VIII: Forest Management issues

40. Describe your institution's role regarding forest management.

_____
_____
_____
_____

41. Are there some methods to train people in forest management?

Yes_____; No_____;

42. If **Yes**, what are these methods?

_____
_____
_____
_____

43. What are your institution's goals to increase role in forest management?

_____
_____
_____
_____

44. Name few commercially important trees of your choice.

_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

45. What strategies should be used to maintain sustainable forestland in Cote d'Ivoire?

_____
_____
_____
_____

46. Describe your institution's activities regarding forest regeneration and environmental protection.

_____
_____
_____
_____

47. What resources do you have to perform your tasks?

_____
_____
_____
_____

48. Are these resources enough?
Yes_____; No_____

49. If **No**, what additional resources are necessary for your institution?

_____
_____
_____
_____

50. Give your impressions of the state of forest in Côte d'Ivoire?

_____
_____
_____
_____

51. What do you think should be done to get better results in terms of forest regeneration?

_____
_____
_____
_____

52. Do you have a strategy of communication with all parties involved in the context of forest regeneration?

Yes_____; No_____

53. If **Yes,** describe this strategy. If **No**, why not.

_____
_____
_____
_____

54. What are the trees species used in forest regeneration programs in Cote d'Ivoire?

_____
_____
_____
_____

55. Does your institution have a say in policies related to sustainable forest management practices?

Yes_____; No_____

56. If **Yes**, what is the topic?

_____
_____
_____
_____

57. What were the main findings?

_____
_____
_____
_____

58. What impact did your institution findings have on environmental protection and forest management?

59. What are the main obstacles to the development and implementation of sound forest management policies?

60. Did your institution undertake any actions to sensitize citizens on environmental issues and forest industry development?

61. Describe your opinions concerning forest management and forest industry development in Côte d'Ivoire.

62. Describe your comments and suggestions concerning measures to improve forest management in Côte d'Ivoire?

63. Indicate the level of involvement you have with the following with regard to forest management in Côte d'Ivoire.

Very low	**1**	**2**	**3**	**4**	**5**	**Very high**
Current level of involvement with forest managers	__	__	__	__	__	
Desired level of involvement with forest managers	__	__	__	__	__	
Current level of involvement with government policymakers	__	__	__	__	__	
Desired level of involvement with government policymakers	__	__	__	__	__	
Current level of involvement with wood products manufacturers	__	__	__	__	__	
Desired level of involvement with wood products manufacturers	__	__	__	__	__	
Current level of involvement with indigenous	__	__	__	__	__	
Desired level of involvement with indigenous people	__	__	__	__	__	

Questionnaire For Indigenous People

This interview is designed to collect information on your interest in learning more about forest industry in Côte d'Ivoire. Your participation is voluntary and your individual responses will not be shared with anyone. Information collected from respondents will be analyzed in groups. Statements about your interests, perceptions, views, and desires regarding sustainable forest resources utilization and management will be made. Please be open and sincere while expressing your opinions.

Forest Utilization and Regeneration Practices

Section I: General Information

1. Age:

20-30_____
31-40_____
41-50_____
51-60_____
61+_____

2. Gender:

Male____
Female____

3. Are you originally from this community?

Yes_____; No_____

4. If No, when did you settle in this community?_____

5. Why did you settle in this community?_____

6. Where are you originally from?_____

7. Family Size:

0-4____
5-9____
10+____

8. Education:

Primary_____
High School_____
Undergraduate_____
Graduate____

9. Occupation_____

10. Annual Income:

$0- $9,000_____
$9,001- $18,000_____
$18,001-$28,000_____
$28,001- $38,000_____
$38,001- $48,000_____
$48,001- $58,000_____
$58,001- $68,000_____

Section II: Forest utilization and regeneration Practices

11. For the statements below, please indicate your level of agreement or disagreement regarding the role of the forest in five domains of human welfare in your community by circling the single most appropriate number after each statement.

Forestland.....

	Strongly agree		Neither agree nor disagree		Strongly agree
has Protective services	1	2	3	4	5
has educational services	1	2	3	4	5
has psycho-physiological influences	1	2	3	4	5
can be used for consumption of plants, animals, derivatives	1	2	3	4	5
is a source of land and living space	1	2	3	4	5

12. Below, are different methods used to generate energy (cooking, lighting, etc.). Please put **1** to show the most popular and important method of energy used in your household, **2** to the next most important method and so on.

a. Fuelwood_____
b. Charcoal_____
c. Gas_____
d. Other specify_____

13. Please list few nonwood forest products that you often consume or commercialize.

_____ _____ _____
_____ _____ _____
_____ _____ _____
_____ _____ _____

14. Suppose you own 1000 hectares of forests, how would this land serve you?

_____
_____
_____
_____

15. How would you manage your land for better results? What would be the desired results?

_____
_____
_____
_____

16. How important are each of the following elements in forest utilization and forest regeneration practices?

Less important	1	2	3	4	5	**Very important**
a. Technical assistance		_	_	_	_	
b. Financial assistance	_	_	_	_	_	
c. Management expertise	_	_	_	_	_	
d. Environmental awareness	_	_	_	_	_	

Section III: Landownership types, utilization and land security

17. Are your lands owned by the community?

Yes_____; No_____

18. How is land use governed? Who can use it? And how its usage is segregated?

_____
_____
_____
_____

19. Do you own your land?

Yes_____; No_____

20. If **Yes**, Do you have your land titles?
Yes_____; No_____;

21. Have you ever sold some land(s)?
Yes____; No_____;

22. If **Yes**, how much did you earn?
$_____for how many hectares?_____. When this happened?_____. Where it happened?_____

23. Do you have some plantations?
Yes____; No_____;

24. If **Yes**, how many hectares do you own?_____

25. What kind of crops do you grow?

_____ _____ _____
_____ _____ _____

26. Please, check *the single most important factor* that is applied to you.

Private landownership is:

a. Unimportant_____
b. Important_____
c. Very important_____
d. Do not know_____

Section IV. Knowledge of Forest management and regeneration

27. If a forest is cut, how long does it take to regenerate ?

0-5 years____; 6-11 years____; 12-17 years_____; 18-23 years_____; 24+_____;
Do not know_____.

28. Please, check method used to regenerate cut forest resources.
a. Natural method (fallow)_____
b. Direct seedling_____
c. Tree planting_____
d. All above_____
e. Other specify_____

29. Does the government have policies or programs which are intended to encourage forest based economic development in your community?
Yes_____; No_____

30. If Yes, what are the programs?

_____
_____
_____
_____

31. Do you grow trees for the purpose of forest regeneration?

Yes____; No_____

32. If no, under What conditions would you consider such policy?

_____
_____
_____
_____

33. Are you aware of methods to better care for the forestland in your community?

_____
_____
_____
_____

34. What can be done to prevent the forest from being over utilized?

_____
_____
_____
_____

Strategic framework to establish two-way communication between indigenous landowners and policymakers.

Section V: Forest Policies

35. How often does the government inform you about forest policies?

Every 6 months_____
Every 12 months_____
Every 24+ months_____
not at all_____

36. How often do you receive assistant from forestry officials to discuss issues related to the use of forestland?

Every 6 months_____
Every 12 months_____
Every 24+ months_____
Seldom_____
Not at all_____

37. Are you aware of government policies or programs that prevent land sales?

Yes___
No___
Do not know_____

38. Have you ever participated in forest policy decision making processes?

Yes_____
No_____

39. Do you think involving the rural population in forest policy decision making processes can contribute to better forest management practices? Why? Why not?

_____
_____
_____
_____

40. Can you think of some recommendations that can best suit forest management in your community?

_____
_____
_____
_____

Awareness on Environmental Issues

Section VI. Environmental Issues

41. Have you ever experienced a depletion of forestland the past 20 years?
Yes____; No_____

42. If **Yes**, what are the current effects of the deforestation?

_____
_____
_____
_____

43. How long the deforestation effects can last?
0-5 years_____
6-11 years_____
12+ years_____
Forever_____

44. What are the socio-economic problems the deforestation bring in the community? List few as they affect human lives.

_____
_____
_____
_____

45. Do you have some ways to prevent the deforestation of the forestland? Give some practical examples.

_____
_____
_____
_____

46. Indicate the level of involvement you have with the following with regard to forest management in Côte d'Ivoire.

	Very low	**1**	**2**	**3**	**4**	**5**	**Very high**
Current level of involvement with government policymakers		—	—	—	—	—	
Desired level of involvement with government policymakers		—	—	—	—	—	
Current level of involvement with university		—	—	—	—	—	
Desired level of involvement with university		—	—	—	—	—	
Current level of involvement with wood products manufacturers		—	—	—	—	—	
Desired level of involvement with wood products manufacturers		—	—	—	—	—	
Current level of involvement with forest managers		—	—	—	—	—	
Desired level of involvement with forest managers		—	—	—	—	—	

Questionnaire for Wood Products Manufacturers

This interview is designed to collect information on your interest in learning more about forest industry in Côte d'Ivoire. Your participation is voluntary and your individual responses will not be shared with anyone. Information collected from respondents will be analyzed in groups. Statements about your interests, perceptions, views, and desires regarding sustainable forest resources utilization and management will be made. Please be open and sincere while expressing your opinions.

Forest Utilization and Regeneration Practices

Section I: General Information

Name of Institution_____
Date of Creation_____
Department_____
Number of Employees_____

1. Age:

20-30_____; 31-40_____; 41-50_____; 51-60_____; 61+_____

2. Gender:

Male_____
Female____
Married___

3. Family Size:
0-4_____
5-9_____
10+_____

4. Education:

Primary_____
High School_____
Undergraduate_____
Graduate____

5. Occupation_____

6. Annual Income:

$0- $9,000_____
$9,001- $18,000_____
$18,001-$28,000_____
$28,001- $38,000_____
$38,001- $48,000_____
$48,001- $58,000_____
$58,001- $68,000_____

7. Your Company's 1996 revenue $_____

Section II: Forest Utilization and Regeneration Practices

8. For the statements below, please indicate your level of agreement or disagreement regarding the role of the forest in five domains of human welfare in your community by circling the single most appropriate number after each statement.

Forestland...

	Strongly disagree		Neither disagree nor agree		Strongly agree
has protective services	1	2	3	4	5
has educational services	1	2	3	4	5
has psycho-physiological influences	1	2	3	4	5
can be used for consumption of plants, animals, derivatives	1	2	3	4	5
is a source of land and living space	1	2	3	4	5

9. Below, are different methods used to generate energy (cooking, lighting, etc.). Please put **1** to show the most popular and important method of energy used in your household, **2** to the next most important method and so on.

a. Fuelwood_____
b. Charcoal_____
c. Gas_____
d. Other specify_____

10. Suppose you own 1000 hectares of forests, how would this land serve you?

_____
_____
_____
_____

11. How would you manage your land for better results? What would be the desired results?

_____
_____
_____
_____

12. How important are each of the following elements in forest utilization and forest regeneration practices?

Very unimportant	1	2	3	4	5	**Very important**
a. Technical assistance	__	__	__	__	__	
b. Financial assistance	__	__	__	__	__	
c. Management expertise	__	__	__	__	__	
d. Environmental awareness	__		__	__	__	

13. Are your lands owned by the community?
Yes____; No_____

14. If **Yes**, how is land use governed? Who can use it? And how its usage is segregated?

_____
_____
_____
_____

15. Do you own your land?
Yes____; No_____

16. If **Yes**, do you have your land titles?
Yes___; No____

17. Have you ever sold some land(s)/
Yes_____; No_____

18. If **Yes**, how much did you earn?
$_____for how many hectares?_____. When this happened?_____. Where it happened?_____

19. Do you have some plantations?
Yes____; No_____

20. If **Yes**, how many hectares do you own?_____

21. What kind of crops do you grow?

_____
_____
_____
_____

22. Please, check the single most important factor that is applied to you?
Private landownership is:
a. Unimportant_____
b. Important_____
c. Very important_____
d. Do not know_____

Section III. Forest Management

23. How long does it take for a cut forest to regenerate?
0-5 years_____
6-11 years_____
12-17 years_____
18-23 years_____
24+ years_____
Do not know_____

24. Please, check the method used to regenerate depleted forest resources.
a. Natural method (fallow)_____
b. Direct seedling_____
c. Tree Planting_____
d. All above_____
e. Other specify

25. Do you grow trees for the purpose of forest regeneration?
Yes_____; No_____

26. If **No**, under what condition would you consider such policy?

_____
_____
_____
_____

27. Are you aware of methods to better care for the forestland in Côte d'Ivoire?

_____
_____
_____
_____

28. What can be done to prevent the forest from being over utilized?

_____
_____
_____
_____

Strategic framework to establish two-way communication between indigenous landowners and policymakers.

Section IV: Forest Policies and Policies' Communication

29. Does the government have policies or programs which are intended to encourage forest based economic development?

a. Currently researching concept_____
b. Program in development_____
c. Approved, awaiting funding_____
d. Funded, implementation stage_____
e. None_____
f. Yes_____since_____year
g. Do not know_____

30. If Yes, what are the programs?

_____
_____
_____
_____

31. If yes, approved or funded, were these policies or programs initiated by:

a. National Assembly_____
b. Office of the President_____
c. International Development Agency_____
d. Minister of Agriculture and Environmental Protection_____
e. Other specify_____

32. How often is your company informed about forest policies or programs?

Every 6 months_____
Every 12 months_____
Every 24+ months_____
Not at all_____

33. How often is your company assisted by the forestry officials to discuss issues related to the use of forestland?

Every 6 months_____
Every 12 months_____
Every 24+ months_____
Very seldom_____
Not at all_____

34. How often is your company involved in forest policy decision-making process?

Never_____
Sometimes_____
Very often_____

35. Do you think involving your company in forest policy decision making process is a better forest management practices? Why? Why not?

_____
_____
_____
_____

36. Can you think of some recommendations that can best suit forest management in Côte d'Ivoire?

_____
_____
_____
_____

Section V: Forest Industry Development

37. Indicate the relative importance of the following industry development elements in Côte d'Ivoire.

	Very unimportant 1	2	3	4	5 **Very Important**
Attracting new primary industry	—	—	—	—	—
Attracting new value added industry	—	—	—	—	—
Increase employment in the industry	—	—	—	—	—
Increase market share of Côte d'Ivoire forest products in world market	—	—	—	—	—
Encourage use of underutilized timber species	—	—	—	—	—
Promote forestry education, technology transfer, and technical assistance	—	—	—	—	—
Guarantee future timber supply	—	—	—	—	—
Support rural economic development	—	—	—	—	—
Increase export opportunities in the wood industry	—	—	—	—	—
Industry modernization	—	—	—	—	—
Promote network formation	—	—	—	—	—
Promote entrepreneurship	—	—	—	—	—

38. Please indicate which industry sectors should be encouraged or promoted .

Existing primary forestry industry?_____
Existing secondary forest products industry?_____
Attract new primary forestry industry?_____
Attract new secondary forestry industry?_____

39. What methods should be used in your opinion?

_____
_____
_____
_____

40. If target sectors are existing industries, what methods are used to promote new markets for these industries?

Advertising at trade shows_____
Reporting market prices_____
Distributing product information_____
Publishing industry directories_____
Foreign market exploration/marketing_____
Other_____

41. If attracting new industry, what methods are used to promote new markets for these industries?

Reporting business climate_____; Reporting labor conditions_____; Reporting site available for development_____; Offering tax incentives_____;
Other_____

42. Which following elements have/are being created as part of government industry development program(s)?

	Planned	Approved	Existing
a. Marketing and promotion	_____	_____	_____
b. Forest management	_____	_____	_____
c. Wood industry			
loans	_____	_____	_____
grants	_____	_____	_____
tax incentives	_____	_____	_____
d. Export assistance	_____	_____	_____
e. Educational Assistance			
Labor training	_____	_____	_____
Management training	_____	_____	_____

Section VI: Successful Elements

43. List the three most successful areas of government program(s) since its implementation.

1._____

_____

2._____

_____

3._____

_____

44. What factors led to these successes?

_____

_____

_____

_____

45. What role did the following factors play in establishing the programs(s) and adding to their success?

	Very Unimportant 1	2	3	4	5 **Very Important**
Strong government leadership	—	—	—	—	—
International Development Agency Cooperation	—	—	—	—	—
National economy conditions	—	—	—	—	—
Adequate funding	—	—	—	—	—
Forest resource considerations	—	—	—	—	—
Global forest products demand	—	—	—	—	—
Other_____	—	—	—	—	—

Section VII: Program Deficiencies

46. List three areas in which government industry development program(s) have been unsuccessful

1. _____
_____

2. _____
_____

3. _____
_____

47. What factors led to this situation?

_____
_____
_____
_____

48. What program elements do you feel should be added to the existing program(s) in order for it (them) to succeed?

_____
_____
_____
_____

Section VIII: Forest Management Issues

49. Have you ever done a forest inventory?

Yes_____; No_____

50. If **Yes**, how often_____

51. When was the last time the forest inventory done?

_____

52. What is the current gross national standing volume?_____million cubic meters.

53. Out of the national standing volume, what is the percentage share of most commercially valuable trees?

_____

54. Name few commercially important trees of your choice.

_____ _____ _____ _____ _____ _____
_____ _____ _____ _____ _____ _____
_____ _____ _____ _____ _____ _____

55. What are the strategies used to preserve sustainable forestland in Cote d'Ivoire?

_____
_____
_____
_____

56. Describe your organization's activities regarding forest management.

_____
_____
_____
_____

57. Describe your organization's activities regarding forest regeneration and environmental protection.

_____
_____
_____
_____

58. What resources do you have to perform your tasks?

_____
_____
_____
_____

59. Are these resources enough?

Yes_____; No_____

60. If **No**, what additional resources are necessary for your institution?

_____
_____
_____
_____

61. Give your impressions of the state of forest in Cote d'Ivoire?

_____
_____
_____
_____

62. What do you think should be done to get better results in terms of forest regeneration?

_____
_____
_____
_____

63. Do you have a strategy of communication with indigenous people in the context of forest regeneration?
Yes_____; No_____

64. If **Yes,** describe this strategy. If **No**, why **Not?**

_____
_____
_____
_____

65. What are the trees species used in your forest regeneration programs?

_____

_____

_____

_____

Section IX. Wood Products production

66. What kind of wood products do you manufacture?

Lumber_____Production in 1996_____ cubic meters
Plywood_____Production in 1996_____ cubic meters
Veneer_____Production in 1996_____ cubic meters
All above_____
Others specify_____

67. What major species do you use in manufacturing your products?
_____Production in 1996_____ cubic meters
_____Production in 1996_____ cubic meters
_____Production in 1996_____ cubic meters
_____Production in 1996_____ cubic meters
_____Production in 1996_____ cubic meters

68. Who are your raw material suppliers?

_____

_____

_____

_____

69. Please indicate your level of agreement or disagreement for each of following statements regarding the type of tree species used for wood production by circling the single most appropriate number after each statement.

My company uses the following sizes of tree species for wood products production.....	Strongly disagree		Neither disagree nor agree		Strongly agree
Large (75+ cm dm)	1	2	3	4	5
Medium (31-74 cm dm)	1	2	3	4	5
Small (0-30 cm dm)	1	2	3	4	5

Note: * dm stands for diameter

70. Please rate the level of importance for each of these hardwood species used in wood products production by circling the single most appropriate number after each statement.

Following species are important for wood products production. in my company.	very unimportant		Neither unimportant nor important		Very important
Acajou	1	2	3	4	5
Okoume	1	2	3	4	5
Iroko	1	2	3	4	5
Sipo	1	2	3	4	5
Bete	1	2	3	4	5
Llomba	1	2	3	4	5
Fromager	1	2	3	4	5
Sapelli	1	2	3	4	5
Tiama	1	2	3	4	5
Kossipo	1	2	3	4	5

71. What was your total production in 1996?

_____cubic meters

72. Where did you market your wood products in 1996 (percent of your volume)?

National markets_____%
International: African markets_____%
European markets_____%
Others_____%
Do not know_____
Total= 100%

73. If you export your products, why do you do so? Check all of the applicable options.

a. Small national market_____
b. Presence of foreign competition_____
c. Better prices elsewhere_____
d. Desire a diversity in markets_____
e. Other specify_____

74. Indicate your methods of production

_____
_____
_____
_____

Section X: Marketing Information

75. Please indicate your pricing objectives?

a. Profit_____
b. Market share_____
c. Other specify_____

76. Please indicate your pricing strategies?

a. Cost based_____
b. Demand based_____
c. Competition based_____
d. Break even_____
e. Other specify_____

77. Do you prefer to market your own products or to have others do it for your?

Self_____
Other____

78. Please indicate how you promote your products? Check all of the applicable options.

a. Word of mouth_____
b. Networking_____
c. Trade shows_____
d. Newspaper ads_____
e. Sales representative_____
f. Billboard_____
g. Radio_____
h. TV_____
I. Other specify_____

79. Indicate the level of involvement you have with the following with regard to forest management in Cote d'Ivoire.

Very low	**1**	**2**	**3**	**4**	**5**	**Very high**
Current level of involvement with government policymakers	—	—	—	—	—	
Desired level of involvement with government policymakers	—	—	—	—	—	
Current level of involvement with university	—	—	—	—	—	
Desired level of involvement with university	—	—	—	—	—	
Current level of involvement with indigenous	—	—	—	—	—	
Desired level of involvement with indigenous	—	—	—	—	—	
Current level of involvement with forest managers	—	—	—	—	—	
Desired level of involvement with forest managers	—	—	—	—	—	

APPENDIX B
SUPPORTING DOCUMENTS

INSTITUT DES FORETS
IDEFOR
RECHERCHES AGRONOMIQUES EN ZONE FORESTIERE

BALLE Pity
Directeur
DEPARTEMENT FORESTERIE (DFO)
P. D. TRACHE

08 B P 33 Abidjan 08
(Côte d'Ivoire)
Tel (225) 44 09 53
Fax (225) 44 21 09

INSTITUT DES FORETS
IDEFOR
RECHERCHES AGRONOMIQUES EN ZONE FORESTIERE

FORESTERIE
(DFO)

Abidjan, le 09 JUIN 1997

N/Réf. : 127 . 97

Monsieur le Directeur
du Laboratoire Botanique
FAST - Université de Cocody

ABIDJAN

Monsieur le Directeur,

Monsieur Koudou Ahilé Nicolas en stage à l'IDEFOR/DFO prépare un doctorat dans le domaine du marketing des produits forestiers. Dans ce cadre, il se propose de réaliser un certain nombre d'enquêtes aussi bien dans le secteur de la Recherche, que celui du Développement et de l'Enseignement.

Aussi, nous vous serions reconnaissant de bien vouloir le recevoir dans votre institution.

Par ailleurs, toutes documentations susceptibles de l'éclairer seraient les bienvenues.

Vous remerciant de votre bienveillance attention, nous vous prions de croire, Monsieur le Directeur, l'expression de notre considération distinguée.

Le Directeur

INSTITUTS DES FORETS
LE DIRECTEUR
Département Foresterie

BALLE Pity

Abidjan, le 17 Juin 1997

OBJET : Autorisation de
Recherche en Marketing
des Produits Forestiers.

/-) Monsieur le Ministre
de l'Agriculture et
des Ressources Animales.

/)/)onsieur le Ministre,

J'ai l'honneur de solliciter de votre haute bienveillance l'obtention d'une autorisation de recherche en vue de préparer un PH.D. en Marketing des produits forestiers.

Dans ce cadre, je me propose de réaliser un certain nombre d'enquêtes aussi bien dans le secteur de la recherche que celui du développement et de l'enseignement.

Aussi je vous serai reconnaissant de bien vouloir me confier les institutions ci-dessous :

- L'Administration forestière
- Les professionnels du bois
- La SODEFOR
- Les instituts de recherches forestières.

Par ailleurs, toutes documentations susceptibles de m'éclairer seraient les bienvenues.

Vous remerciant de votre bienveillance attention, je vous prie de croire Monsieur le Ministre, l'expression de ma considération distinguée.

Contact: 25 25 09

Nicolas KOUDOU
MBA, B.S

INSTITUT DES FORETS

IDEFOR

RECHERCHES AGRONOMIQUES EN ZONE FORESTIERE

DEPARTEMENT
FORESTERIE
(DFO)
N/Réf.: 130.97

- DGEF.
Vu
Accord
pour faciliter la tâche
du Kandia
- copie CTF.

Abidjan, le 09 JUIN 1997

Monsieur le Directeur Général
des Eaux et Forêts

ABIDJAN

MINISTERE DE L'AGRICULTURE
ET DES RESSOURCES ANIMALES
Courrier Arrivée le
- 1 JUIL. 1997
Sous N° 2215

2215

Monsieur le Directeur Général

Monsieur Koudou Ahilé Nicolas en stage à l'IDEFOR/DFO prépare un doctorat dans le domaine du marketing des produits forestiers. Dans ce cadre, il se propose de réaliser un certain nombre d'enquêtes aussi bien dans le secteur de la Recherche, que celui du Développement et de l'Enseignement.

Aussi, nous vous serions reconnaissant de bien vouloir le recevoir dans votre institution.

Par ailleurs, toutes documentations susceptibles de l'éclairer seraient les bienvenues.

Vous remerciant de votre bienveillance attention, nous vous prions de croire, Monsieur le Directeur Général, l'expression de notre considération distinguée.

Le Directeur

B.P.E.

BALLE Pity

SODEFOR

SOCIETE DE DEVELOPPEMENT DES FORETS

SOCIETE D'ETAT

DG/DC/AEM/EB/N°2246/97 Abidjan, le 21 [illegible]

Le 6/1/97.

/-)

Monsieur le Directeur
de l'IDEFOR

A B I D J A N

Mlle Kouadio
Intéressé

Monsieur [illegible]
Stagiaire

Monsieur le Directeur,

En réponse à votre lettre citée en référence, j'ai l'honneur de vous marquer mon accord pour accueillir en qualité de Stagiaire **Monsieur KOUDOU AEILE Nicolas** au sein de la SODEFOR.

L'intéressé pourra prendre contact dès réception de la présente avec le Directeur Commercial de la SODEFOR, qui discutera avec lui, des conditions pratiques de son stage.

Veuillez agréer, Monsieur le Directeur, l'assurance de ma considération distinguée.

Le Directeur Général

Développement
SODEFOR
Le Directeur Général

AMON Z. Jean-Claude

IDEFOR/D.FO
COURRIER ARRIVEE
LE : 27.6.97
SOUS LE N° 389

SODEFOR

SOCIETE DE DEVELOPPEMENT DES FORETS

SOCIETE D'ETAT

DC/AYM/MN/N° 0[illegible]E.97

CERTIFICAT DE STAGE

Le Directeur Commercial soussigné, certifie que Monsieur KOUDOU AHILE Nicolas, Etudiant en Marketing, option produits forestiers, à l'Université de la Louisiane aux Etats-Unis, est en stage à la Direction Commerciale de la SODEFOR depuis le 1er Juillet 1997.

En foi de quoi le présent certificat lui est délivré pour servir et valoir ce que de droit.

Fait à Abidjan le 03 JUIL 1997

LE DIRECTEUR COMMERCIAL

AGBATOU YAO Marcellin

AMPLIATIONS :

- DG
- DRH
- Intéressé

INSTITUT DES FORETS
IDEFOR
RECHERCHES AGRONOMIQUES EN ZONE FORESTIERE

BALLE Pity
Directeur
DEPARTEMENT FORESTERIE (DFO)

08 B.P. 33 Abidjan 08
(Côte d'Ivoire)

DES FORETS

IDEFOR

OMIQUES EN ZONE FORESTIERE

Abidjan, le JUIN 1997

FORESTERIE
(DFO)

N/Réf. : 126 • 97

Monsieur le Directeur Général
de INP-HB
à l'attent° du Directeur de l'ESA

YAMOUSSOUKRO

Monsieur le Directeur Général,

Monsieur Koudou Ahilé Nicolas en stage à l'IDEFOR/DFO prépare un doctorat dans le domaine du marketing des produits forestiers. Dans ce cadre, il se propose de réaliser un certain nombre d'enquêtes aussi bien dans le secteur de la Recherche, que celui du Développement et de l'Enseignement.

Aussi, nous vous serions reconnaissant de bien vouloir le recevoir dans votre institution.

Par ailleurs, toutes documentations susceptibles de l'éclairer seraient les bienvenues.

Vous remerciant de votre bienveillance attention, nous vous prions de croire, Monsieur le Directeur Général, l'expression de notre considération distinguée.

Le Directeur

INSTITUT DES FORETS
LE DIRECTEUR
Département Forestier
BALLE Pity

RÉPUBLIQUE DE COTE D'IVOIRE
Union - Discipline - Travail

Premier Ministre

COMITE NATIONAL DE TELEDETECTION ET D'INFORMATION GEOGRAPHIQUE

NOS REF : **0190/98/CNTIG/SG/MF/NMC**

A : **KOUDOU Nicolas**
Etudiant Ivoirien en PHD
USA

FAX : **504 388 42 51**

DE : **Dr Fofana MAMADOU**
Secrétaire Général du CNTIG

FAX : **(225) 22 35 29**

OBJET : **AUTORISATION D 'EXPLOITATION**

Nombre de page : 2

Je soussigné Dr Fofana MAMADOU, Secrétaire Général du CNTIG

(Comité National de Télédétection et d'Information Géographique, PRIMATURE) B.P V 324 Abidjan COTE -D'IVOIRE donnons autorisation

à Monsieur Nicolas KOUDOU étudiant Ivoirien en PHD pour utiliser la

Carte Forestière Ivoirienne sur périmètre d'exploitation forestière en

dessous du 8ème parallèle pour sa dissertation, (dans le cadre stricte de ses recherches).

En foi de quoi, nous lui délivrons cette autorisation pour servir et valoir ce que de droit.

Fait à Abidjan, le 11 février 1998

Le Secrétaire Général
Du CNTIG

Dr Fofana MAMADOU

CNTIG : 22 Av. Delafosse Im. Delafosse 6e étage - Abidjan Plateau B.P. V. 324 Abidjan - Côte d'Ivoire -
Tél. : (225) 22.35.30 - 33.10.91 - Fax : (225) 22.35.29 ; E-Mail : fofana @ cntig • cntig • ci

INSTITUT DES FORETS
IDEFOR
RECHERCHES AGRONOMIQUES EN ZONE FORESTIERE
BALLE Pity
Directeur
DEPARTEMENT FORESTERIE (DFO)
M. ANOH TANO

08 B P 33 Abidjan 08
(Côte d'Ivoire)
Tél. (225) 44 28 52 / 55
Fax (225) 44 21 05

DES FORETS
IDEFOR
OMIQUES EN ZONE FORESTIERE

Abidjan, le 09 JUIN 1997

FORESTERIE
(DFO)

N/Réf. : 128 • 97

Monsieur le Directeur Général
de la SODEFOR

ABIDJAN

Monsieur le Directeur Général,

Monsieur Koudou Ahilé Nicolas en stage à l'IDEFOR/DFO prépare un doctorat dans le domaine du marketing des produits forestiers. Dans ce cadre, il se propose de réaliser un certain nombre d'enquêtes aussi bien dans le secteur de la Recherche, que celui du Développement et de l'Enseignement.

Aussi, nous vous serions reconnaissant de bien vouloir le recevoir dans votre institution.

Par ailleurs, toutes documentations susceptibles de l'éclairer seraient les bienvenues.

Vous remerciant de votre bienveillance attention, nous vous prions de croire, Monsieur le Directeur Général, l'expression de notre considération distinguée.

Le Directeur

INSTITUTS DES FORETS
LE DIRECTEUR
Département Foresterie
BALLE Pity

INSTITUT DES FORETS
IDEFOR
RECHERCHES AGRONOMIQUES EN ZONE FORESTIERE
BALLE Pity
Directeur
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M. Coulibaly N
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Abidjan, le 09 JUIN 1997

FORESTERIE
(DFO)

N/Réf. : 129 • 97

Monsieur le Directeur Général
de THANRY

ABIDJAN

Monsieur le Directeur Général,

Monsieur Koudou Ahilé Nicolas en stage à l'IDEFOR/DFO prépare un doctorat dans le domaine du marketing des produits forestiers. Dans ce cadre, il se propose de réaliser un certain nombre d'enquêtes aussi bien dans le secteur de la Recherche, que celui du Développement et de l'Enseignement.

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Vous remerciant de votre bienveillance attention, nous vous prions de croire, Monsieur le Directeur Général, l'expression de notre considération distinguée.

Le Directeur

INSTITUTS DES FORETS
LE DIRECTEUR
Département Foresterie

BALLE Pity

INSTITUT DES FORETS
IDEFOR
RECHERCHES AGRONOMIQUES EN ZONE FORESTIERE
BALLE Pity
Directeur
DEPARTEMENT FORESTERIE (DFO)
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Fax (225) 44 21 28

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Abidjan, le 09 JUIN 1997

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(DFO)

N/Réf. : 130.97

Monsieur le Directeur Général
de CIB

ABIDJAN

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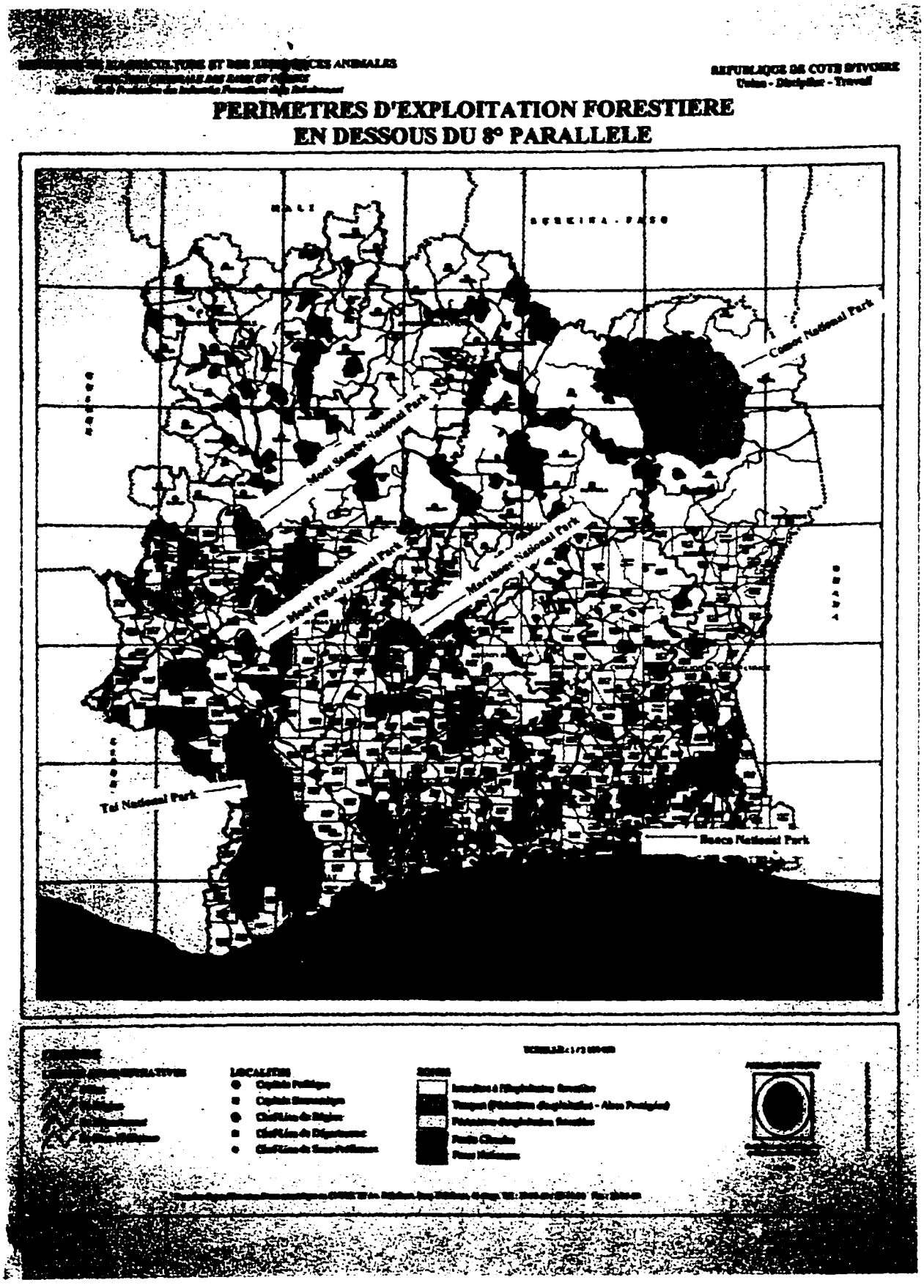
Le Directeur

INSTITUT DES FORETS
DIRECTEUR
Département Foresterie

BALLE Pity

APPENDIX C
COTE D'IVOIRE: MAP OF FORESTRY



VITA

Ahile Nicolas Koudou was born on January 1, 1958, in Doukouhio-Gagnoa, Côte d'Ivoire. He received his bachelor of arts degree in Business Administration from University of Indianapolis in December 1987. In 1988, he was Adjunct Faculty of French language and International studies at Butler University. In December 1989, he received his master's degree in Business Administration from the same University. Between 1990 and 1995, he was Instructor of Marketing and Economics at University of Indianapolis. During his tenure at University of Indianapolis, he received Who's Who Among America's Teachers Award and realized that college teaching was going to be his lifelong career. In August 1995, he started working on his doctoral program in Forest Products Marketing in the School of Forestry, Wildlife, and Fisheries, Louisiana State University. In May 1998, he completed all requirements for his doctor of philosophy degree.

DOCTORAL EXAMINATION AND DISSERTATION REPORT

Candidate: Anile Nicolas Koudou

Major Field: Forestry

Title of Dissertation: Sustainable Forest Resources Utilization And Implications For Economic Development In Sub-Saharan Africa: A Case Study Of Cote D'Ivoire

Approved:

Major Professor and Chairman

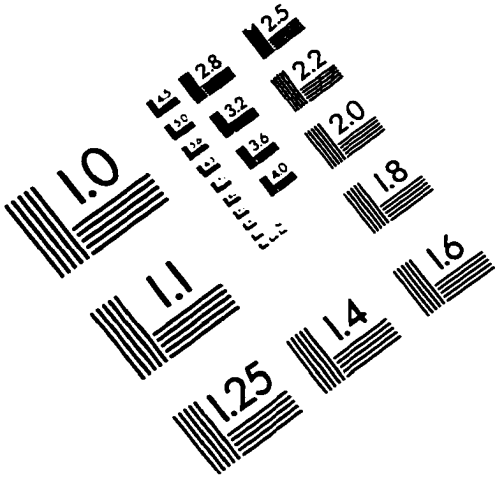
Dean of the Graduate School

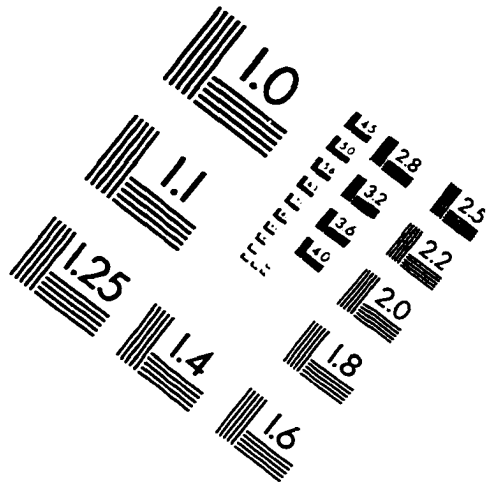
EXAMINING COMMITTEE:

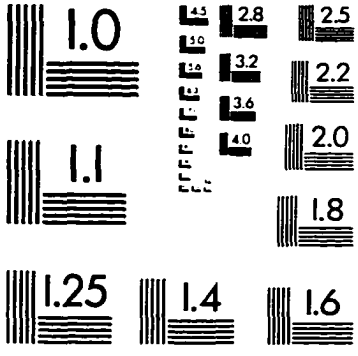
Date of Examination:

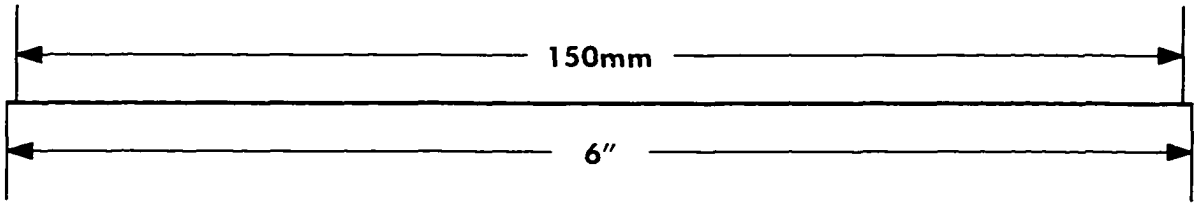
March 20, 1998

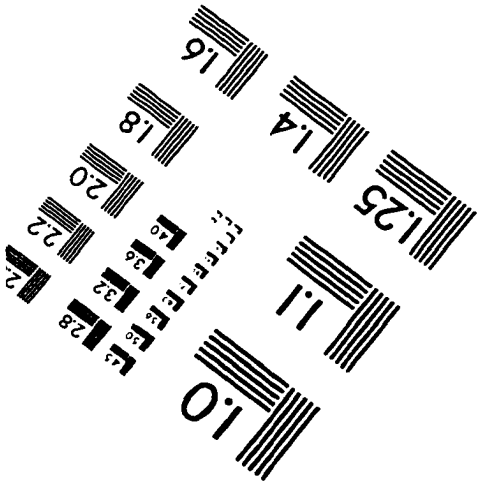
IMAGE EVALUATION TEST TARGET (QA-3)

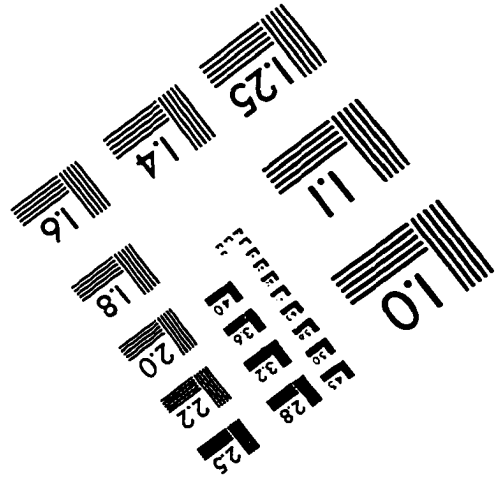












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